

KIC 009549091

Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R_{\star} (R_{\odot})	T_{\star} (K)	R_p (R_{\oplus})	S_p (S_{\oplus})
009549091-01	OBS	No	567.800060	187.196022	1602.2	13.326	11.6	5.6	1.90	5110	7.44	1.35
009549091-02	OBS	No	591.689902	337.016250	1784.1	15.282	17.8	8.0	1.90	5110	7.82	1.27
009549091-03	OBS	No	522.159192	160.717362	571.2	10.500	15.2	-1.0	1.90	5110	4.43	1.51
009549091-04	OBS	No	443.544138	452.231287	1137.8	6.093	15.1	7.0	1.90	5110	7.77	1.87
009549091-05	OBS	No	570.902531	374.292991	841.0	7.949	13.3	5.0	1.90	5110	5.84	1.34
009549091-06	OBS	No	346.974738	388.573649	1024.0	6.470	12.9	6.3	1.90	5110	12.19	2.60

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009549091-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009549091-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
009549091-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
009549091-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009549091-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009549091-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_FEW_DIFFS

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

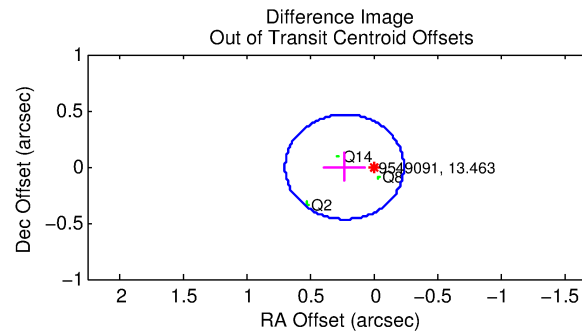
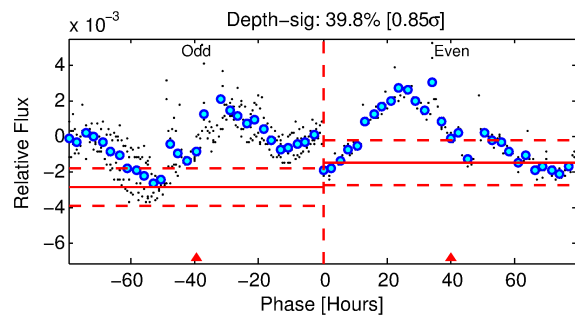
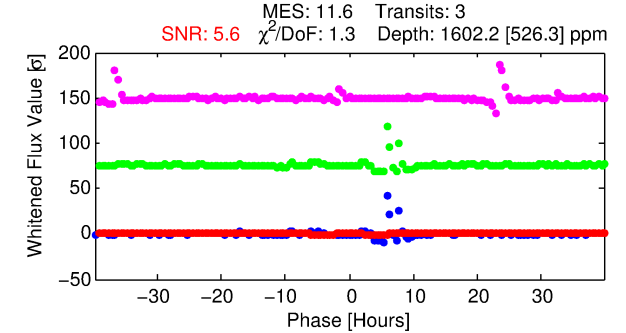
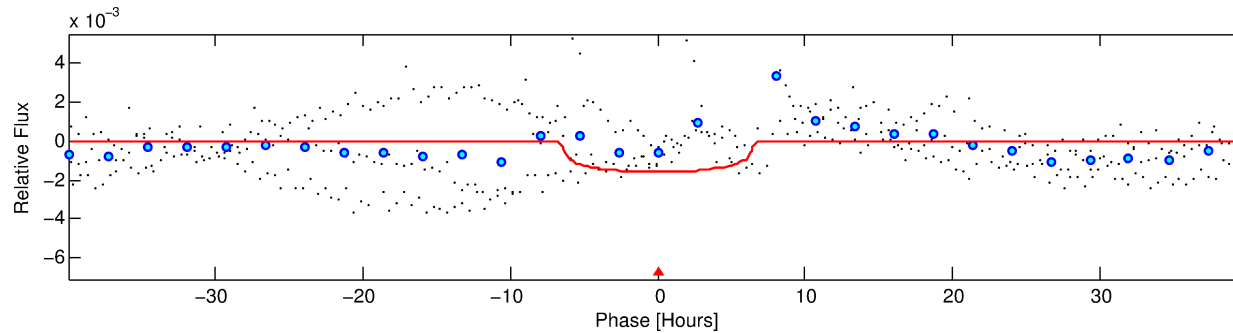
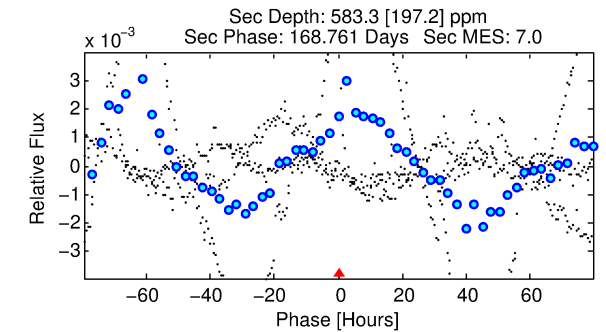
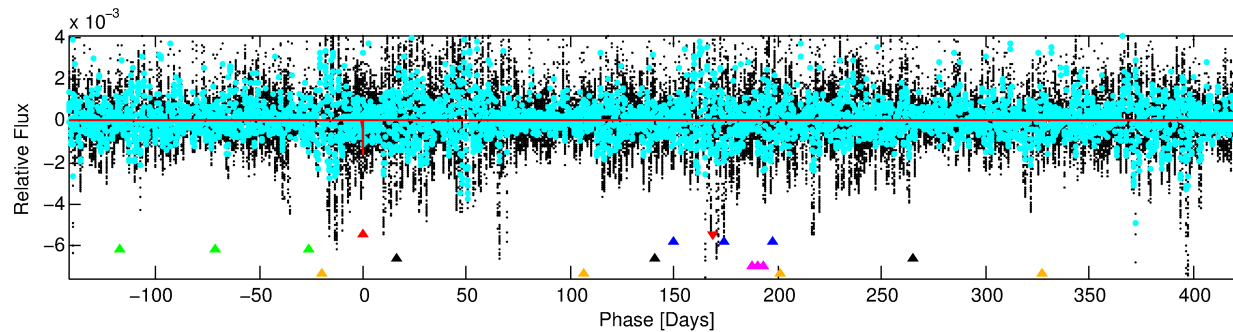
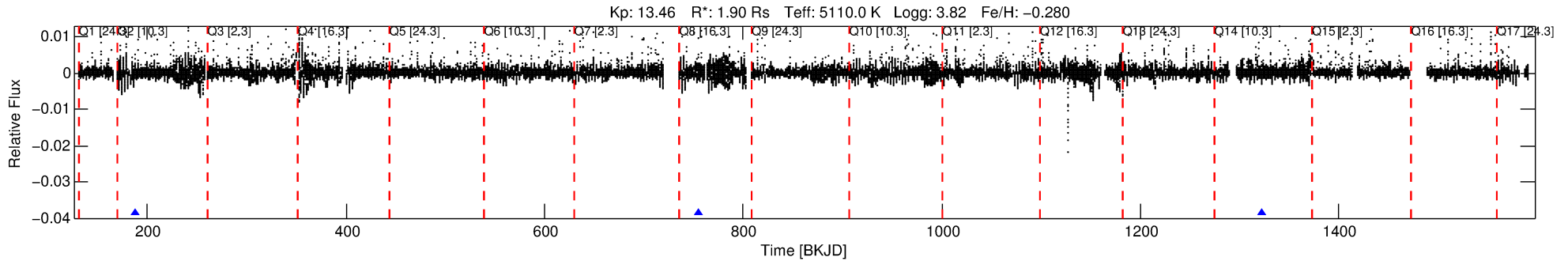
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009549091-01

No Significant Match Found

DV One-Page Summary

KIC: 9549091 Candidate: 1 of 6 Period: 567.800 d



DV Fit Results:

Period = 567.80006 [0.01209] d
Epoch = 187.1960 [0.0156] BKJD
Rp/R* = 0.0359 [0.0406]
a/R* = 332.20 [1362.38]
b = 0.18 [22.54]
Seff = 1.35 [1.80]
Teff = 275 [92] K
Rp = 7.44 [10.01] Re
a = 1.2794 [1.0062] AU
Ag = 9489.20 [25088.26] [0.38σ]
Teffp = 4192 [2399] K [1.63σ]

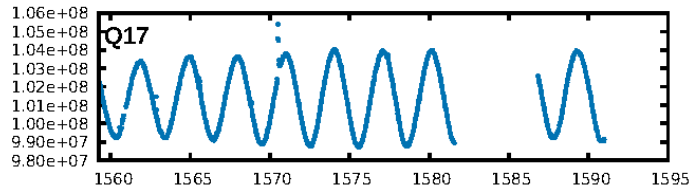
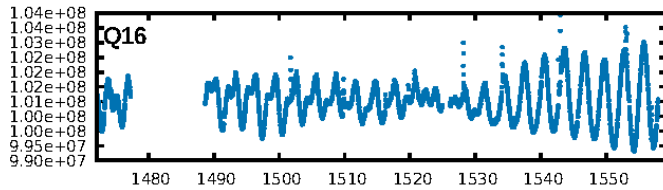
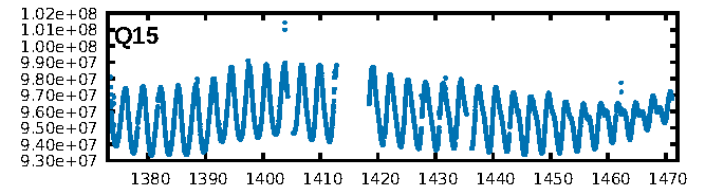
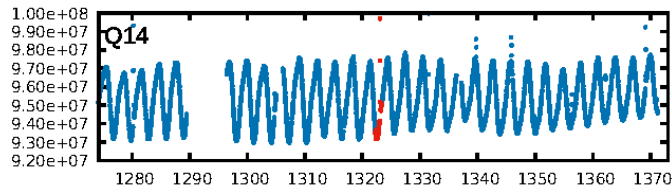
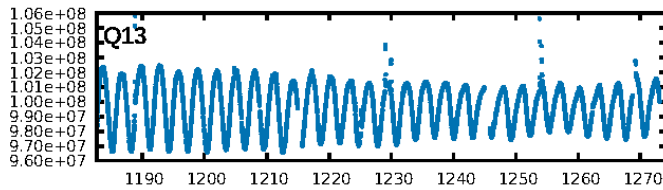
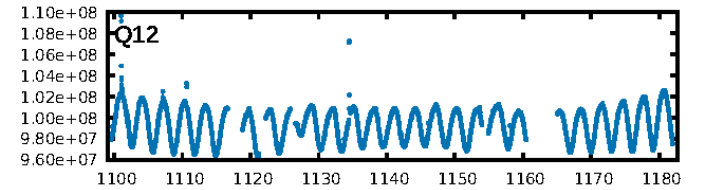
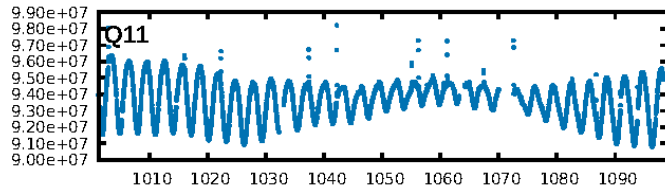
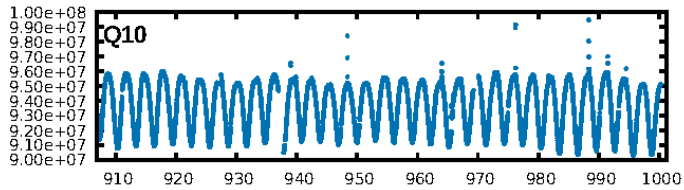
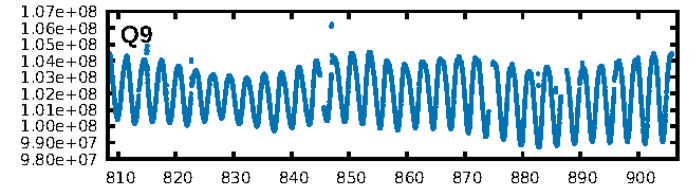
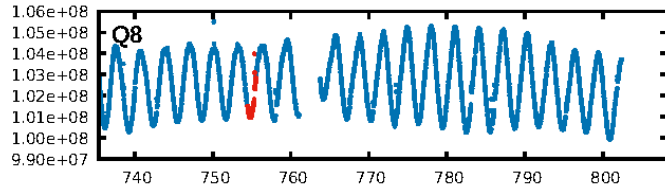
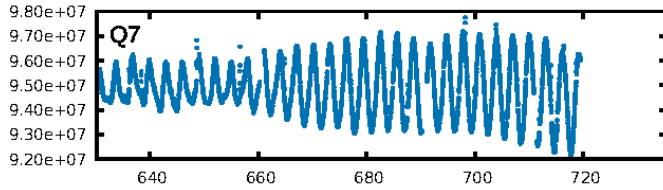
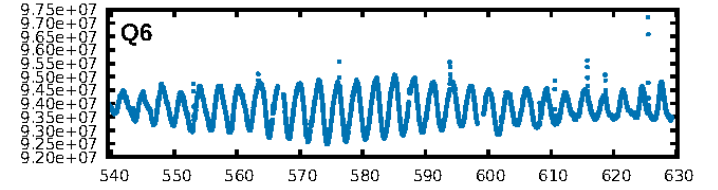
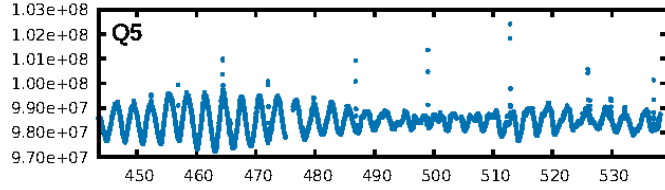
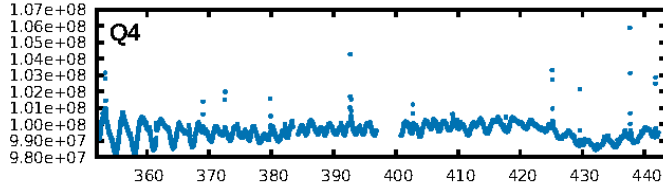
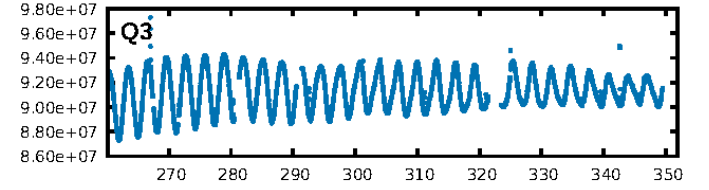
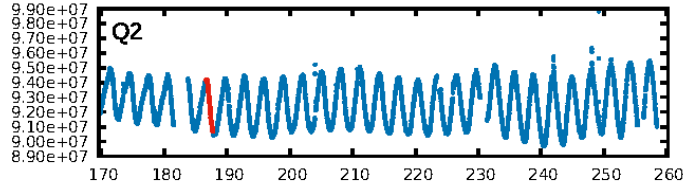
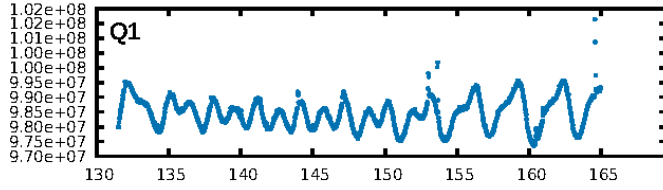
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [64.57σ]
LongPeriod-sig: 100.0% [4.80σ]
ModelChiSquare2-sig: 0.4%
ModelChiSquareGof-sig: 61.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -2.724
Centroid-sig: 13.2%
Centroid-so: 0.666 arcsec [1.47σ]
OotOffset-rm: 0.227 arcsec [1.46σ]
KicOffset-rm: 0.245 arcsec [1.53σ]
OotOffset-st: 2/0/1/0 [3]
KicOffset-st: 2/0/1/0 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

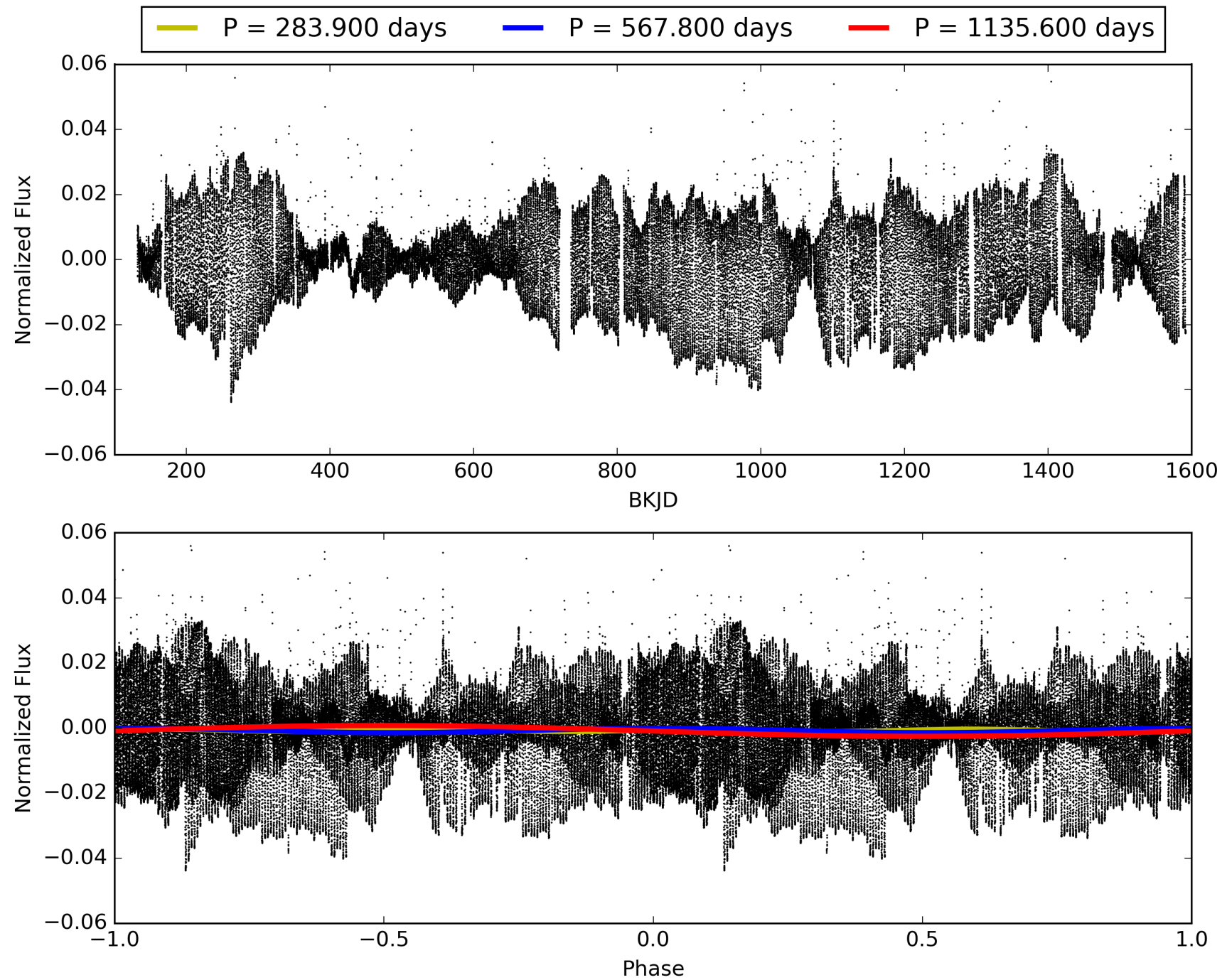
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009549091-01, PDC Light Curves

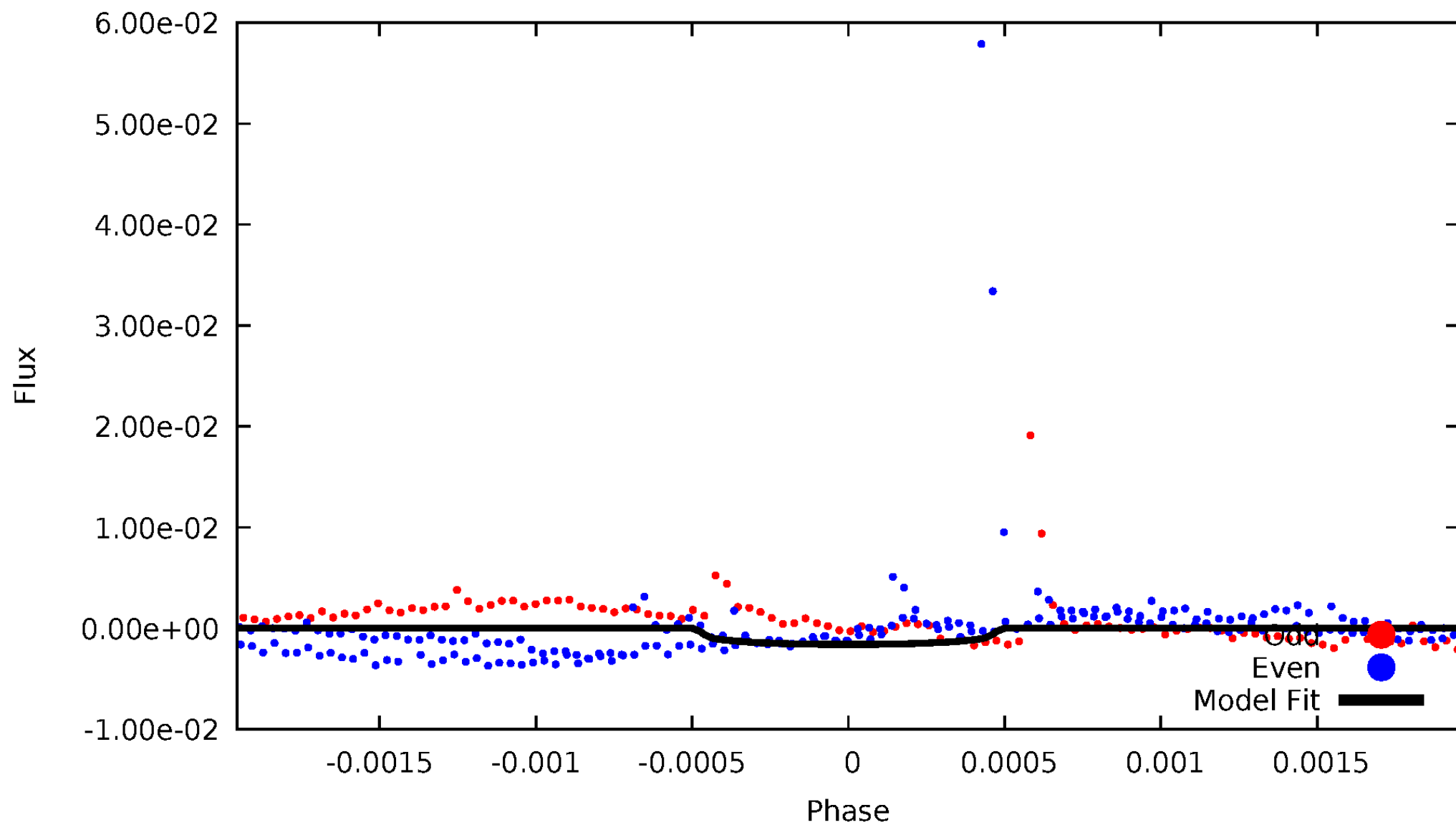


TCE 009549091-01



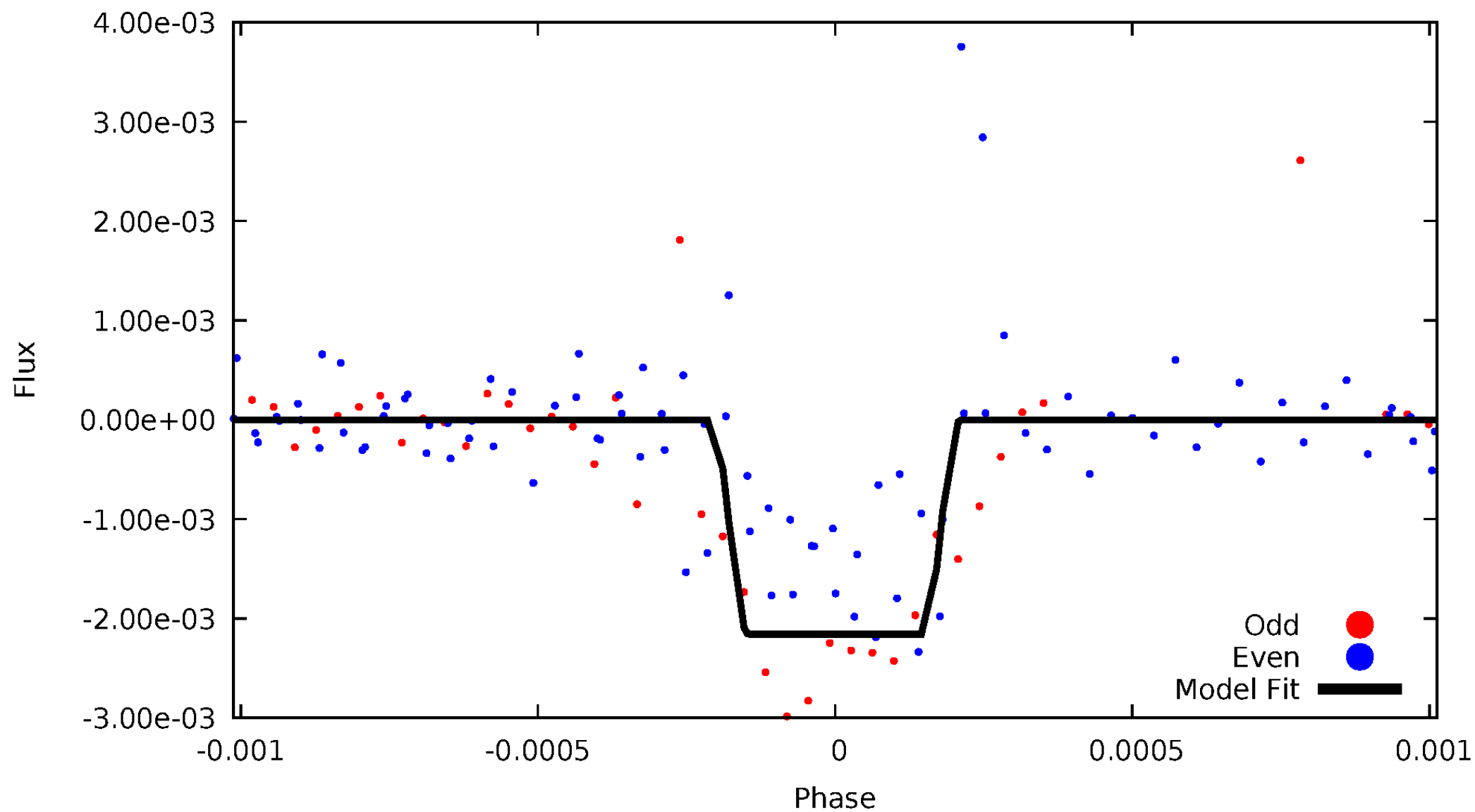
DV Odd/Even

TCE 009549091-01



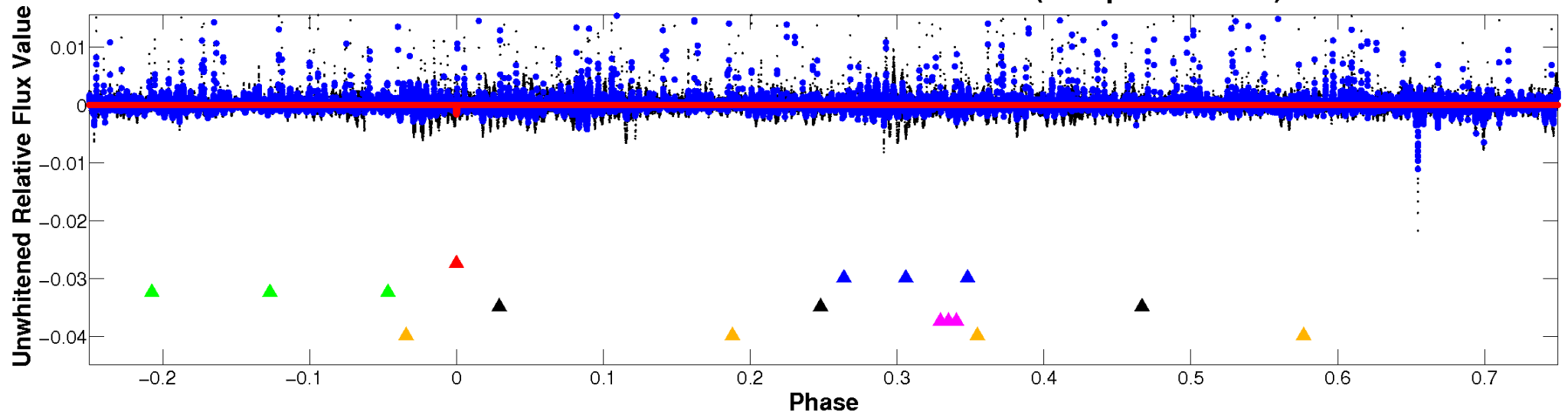
ALT Odd/Even

TCE 009549091-01

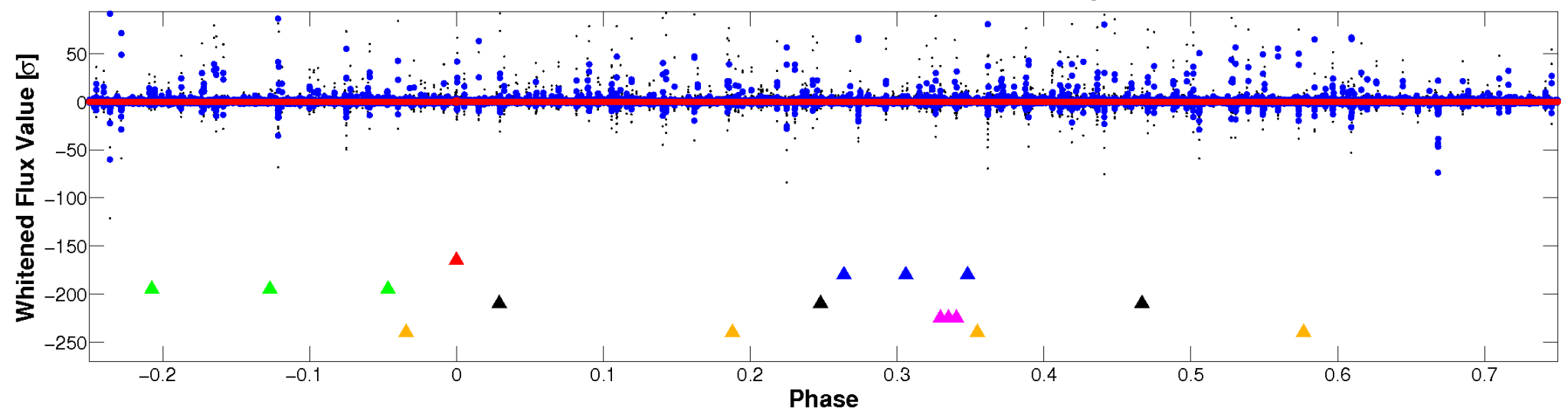


Non-Whitened Vs. Whitened Light Curve

Planet 1 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

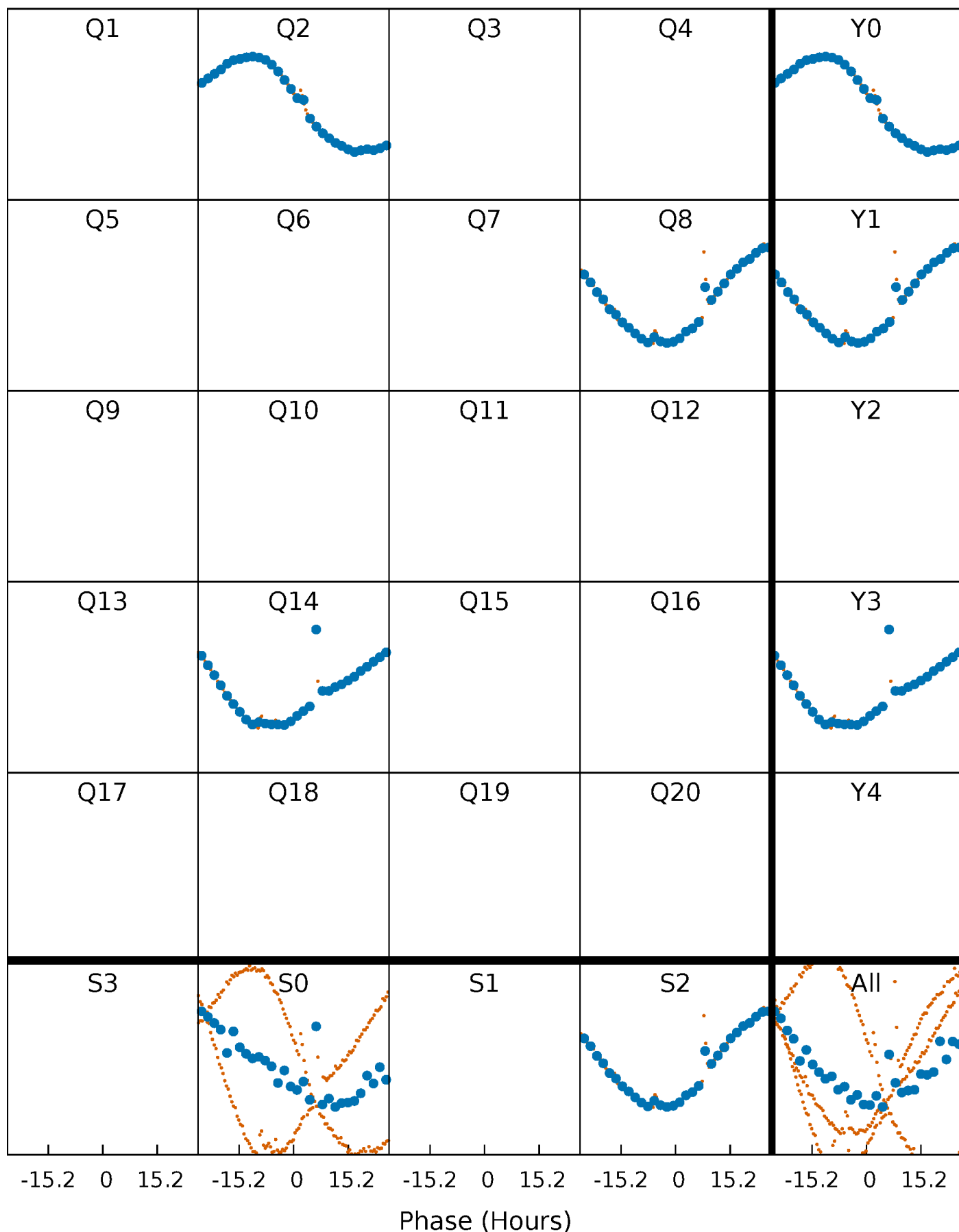


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



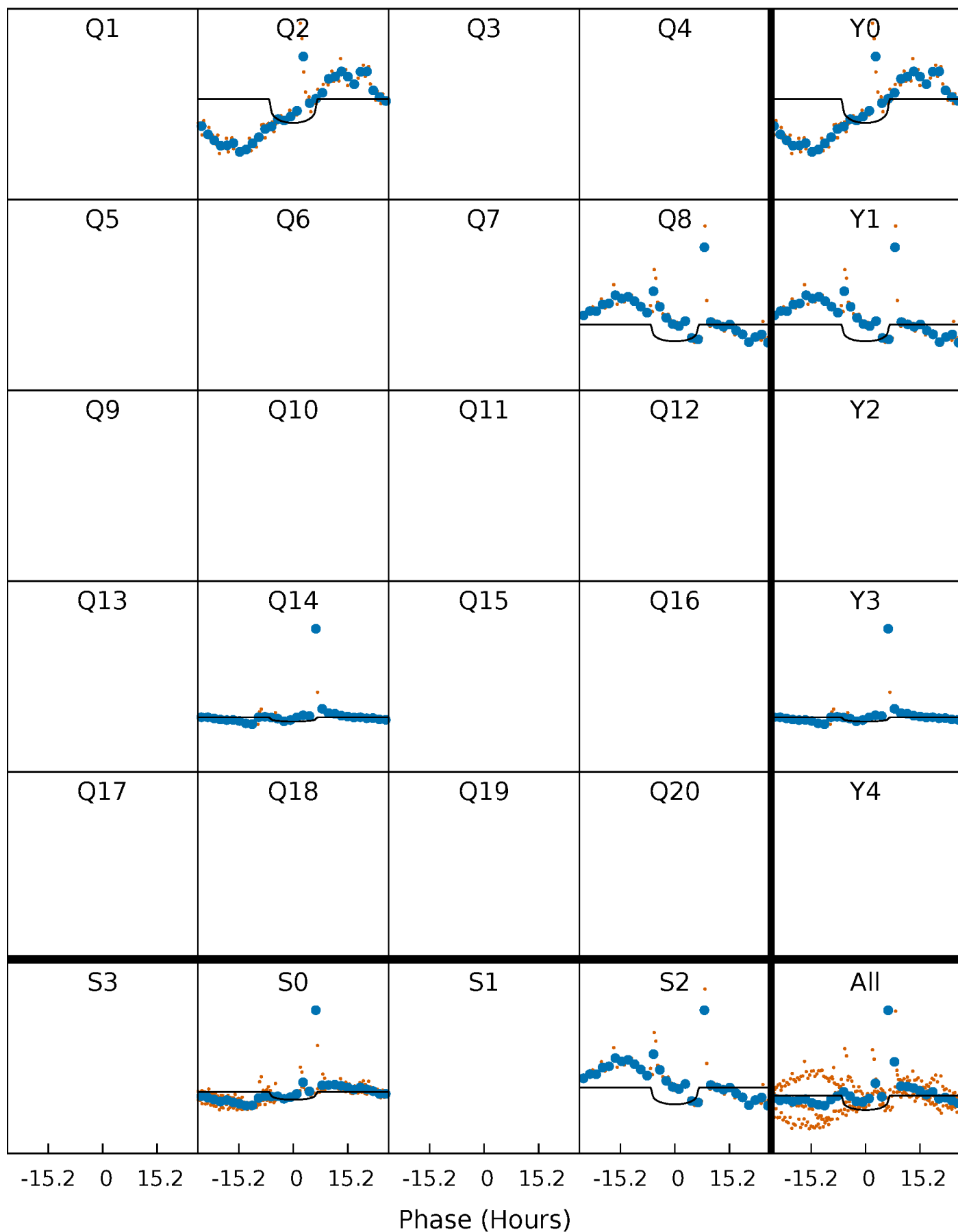
PDC Quarter-Phased Transit Curves

TCE 009549091-01 P=567.800060 Days $T_0=187.196022$ (BKJD)



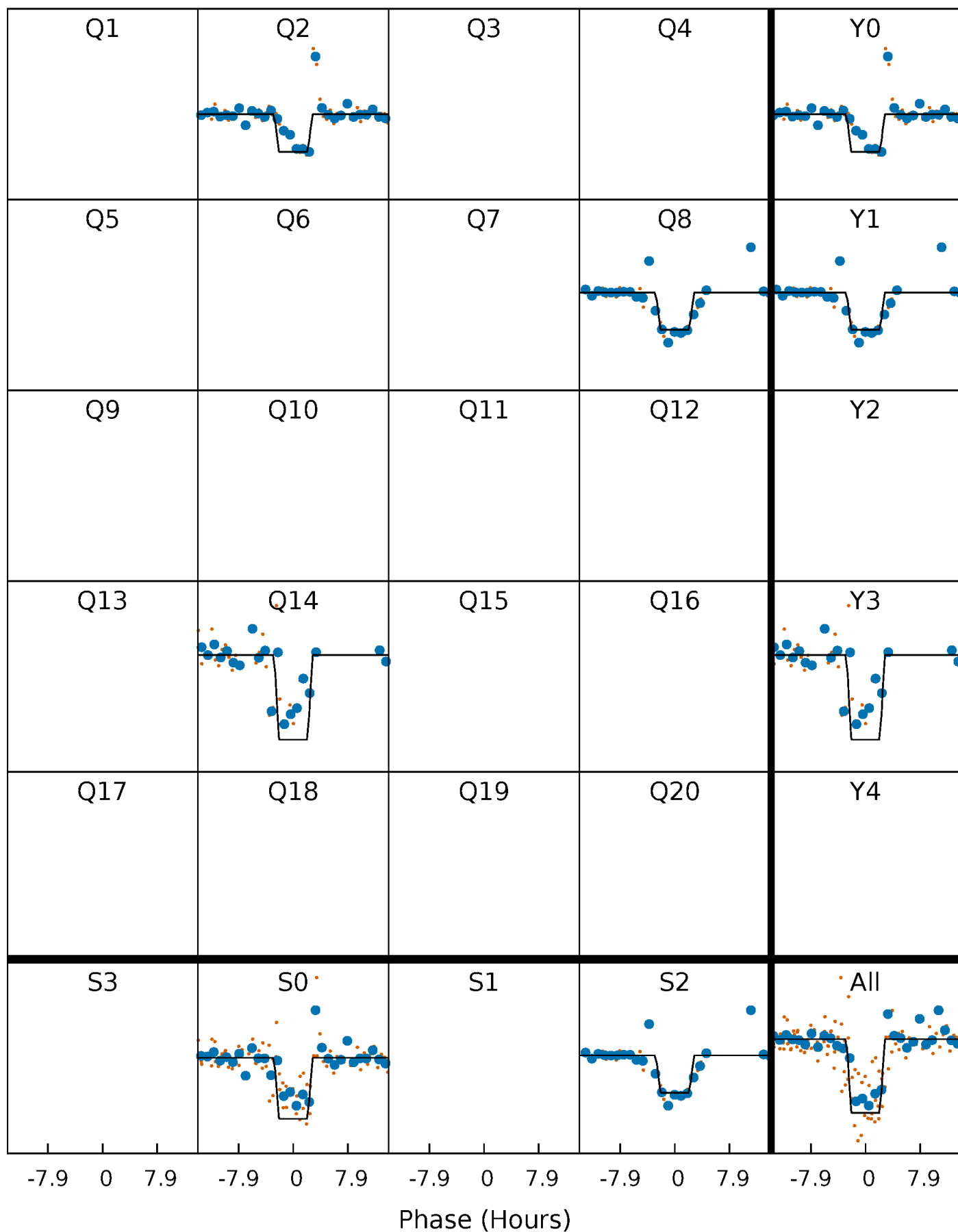
DV Quarter-Phased Transit Curves

TCE 009549091-01 P=567.800060 Days $T_0=187.196022$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

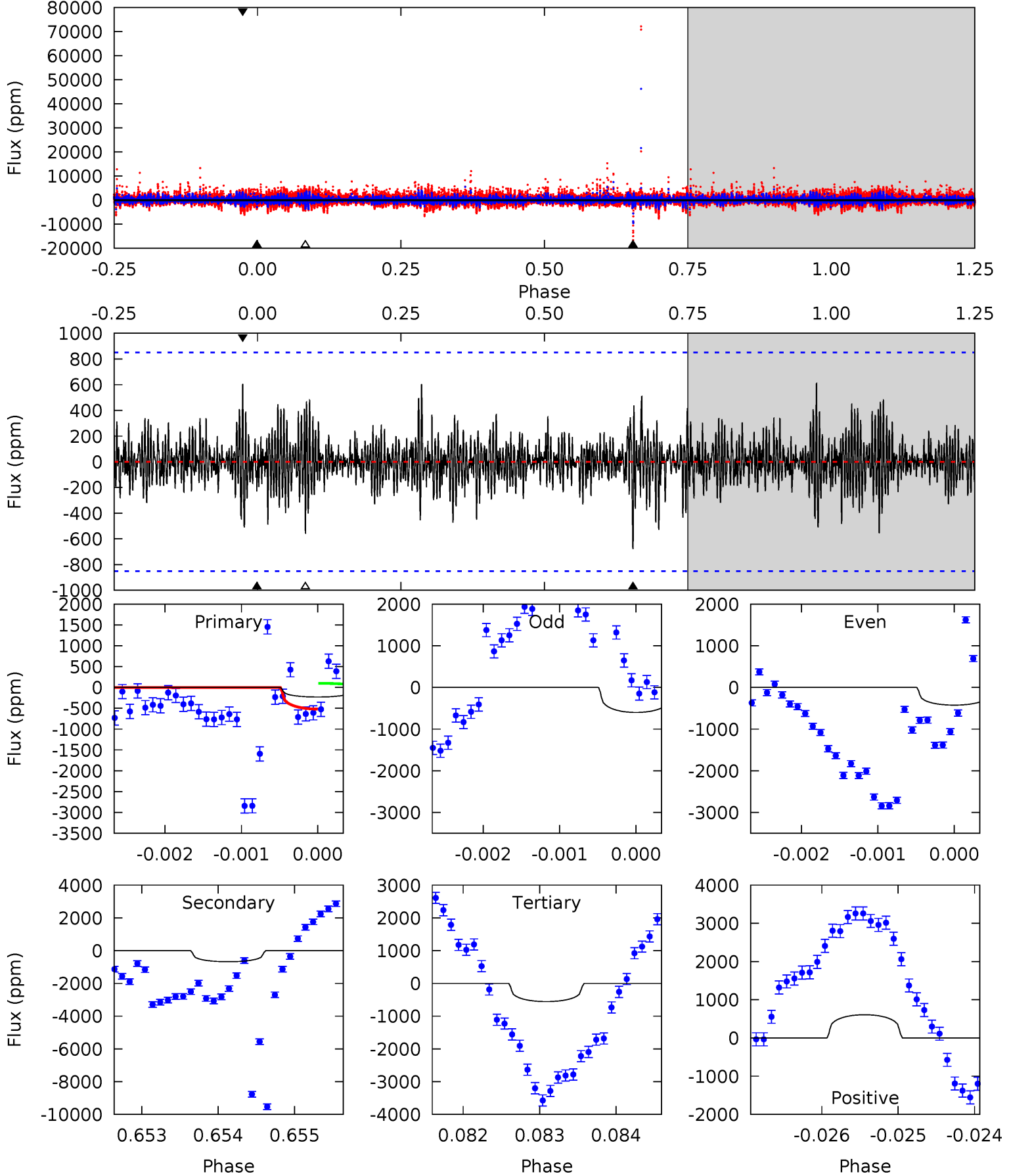
TCE 009549091-01 P=567.766898 Days $T_0=187.156517$ (BKJD)



DV Model-Shift Uniqueness Test

009549091-01, P = 567.800060 Days, E = 187.196022 Days

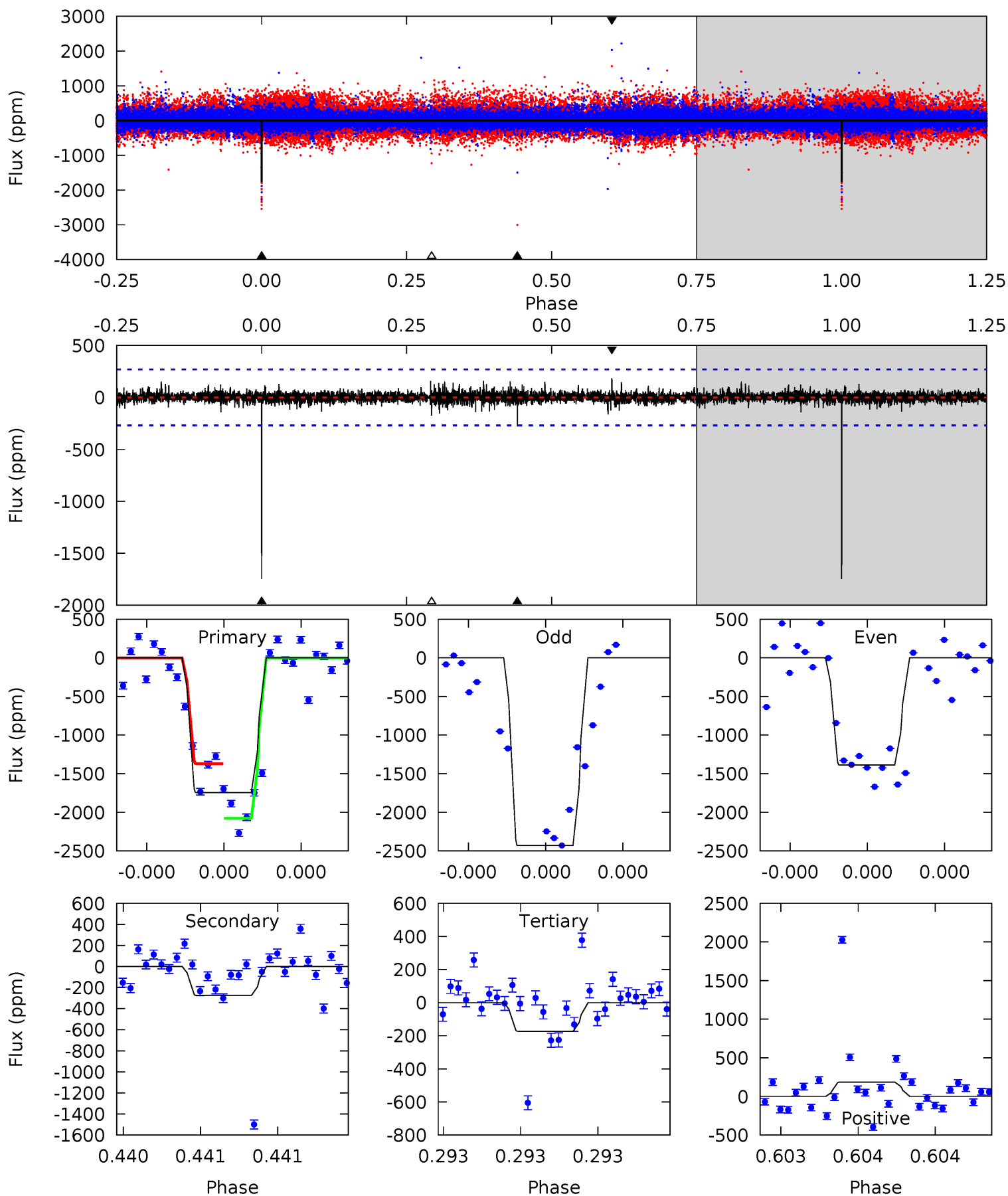
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.47	4.35	3.56	3.89	5.45	3.29	0.95	-2.08	-2.42	0.79	0.45	0.44	1.28	0.47	1.35



Alt Model-Shift Uniqueness Test

009549091-01, P = 567.766898 Days, E = 187.156517 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
36.3	5.72	3.61	3.84	5.61	3.54	0.61	32.7	32.5	2.11	1.88	10.4	1.11	0.10	7.21



Stellar Parameters For KIC 009549091

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5110^{+153}_{-138}	$3.818^{+0.805}_{-0.345}$	$-0.280^{+0.300}_{-0.250}$	$1.900^{+1.387}_{-1.134}$	$0.867^{+0.254}_{-0.157}$	$0.178^{+2.804}_{-0.116}$
	+3%/-3%	+21%/-9%	+107%/-89%	+73%/-60%	+29%/-18%	+1576%/-65%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 009549091-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-679 ± 156	$8.67^{+8.40}_{-5.46}$	374^{+67}_{-61}	4080^{+1942}_{-711}	8237^{+45980}_{-6117}
Alt.	-275 ± 48	$9.70^{+9.52}_{-5.93}$	375^{+64}_{-63}	3381^{+1079}_{-490}	2688^{+14514}_{-2037}

T_{max} = Theoretical Maximum Planetary Temperature
 T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)
 A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{\text{obs}} \gg T_{\text{max}}$ AND $A_{\text{obs}} \gg 1.0$

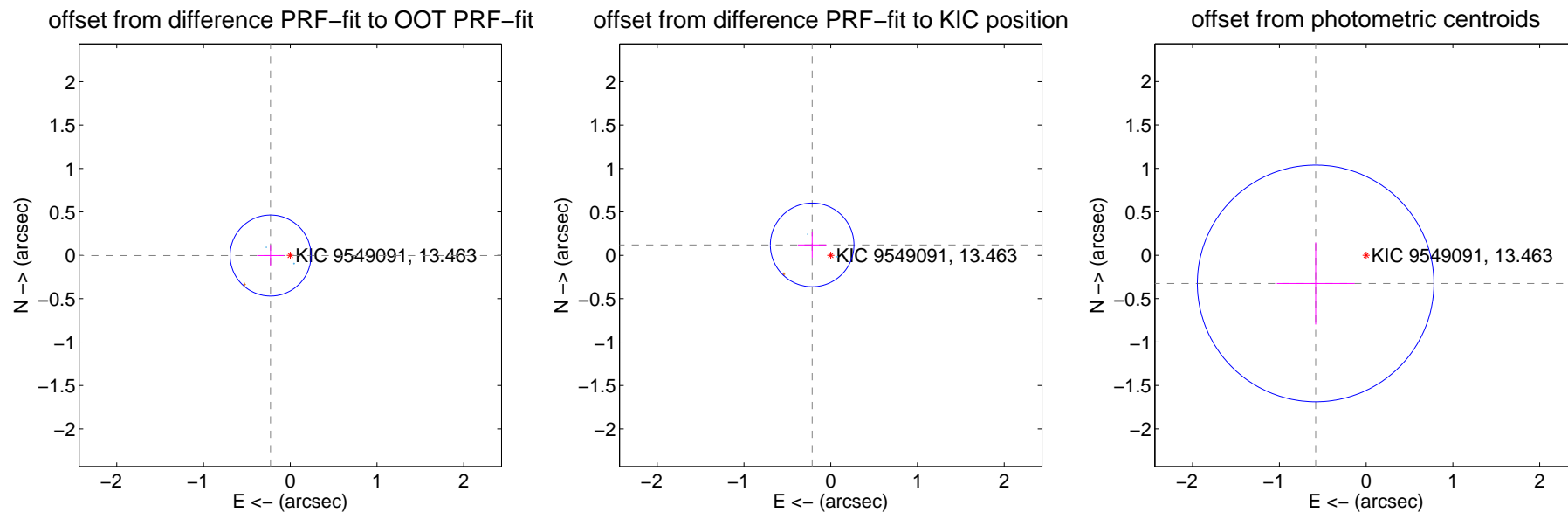
DV Centroid Data

Supplemental centroid analysis for 009549091-01. Kepler magnitude: 13.46. Transit SNR 5.56

There are 2 quarters with good PRF difference image offsets

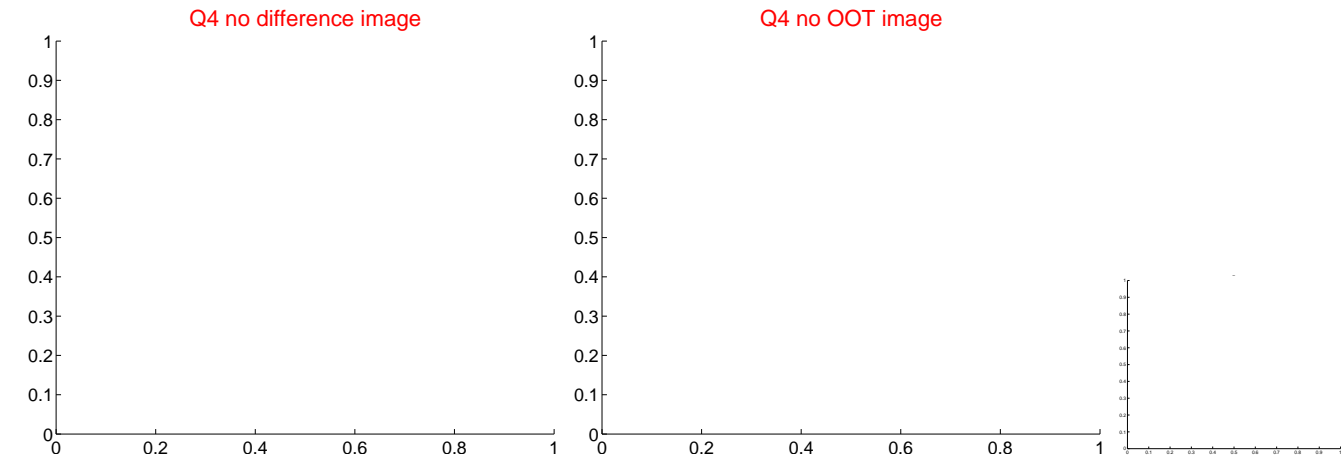
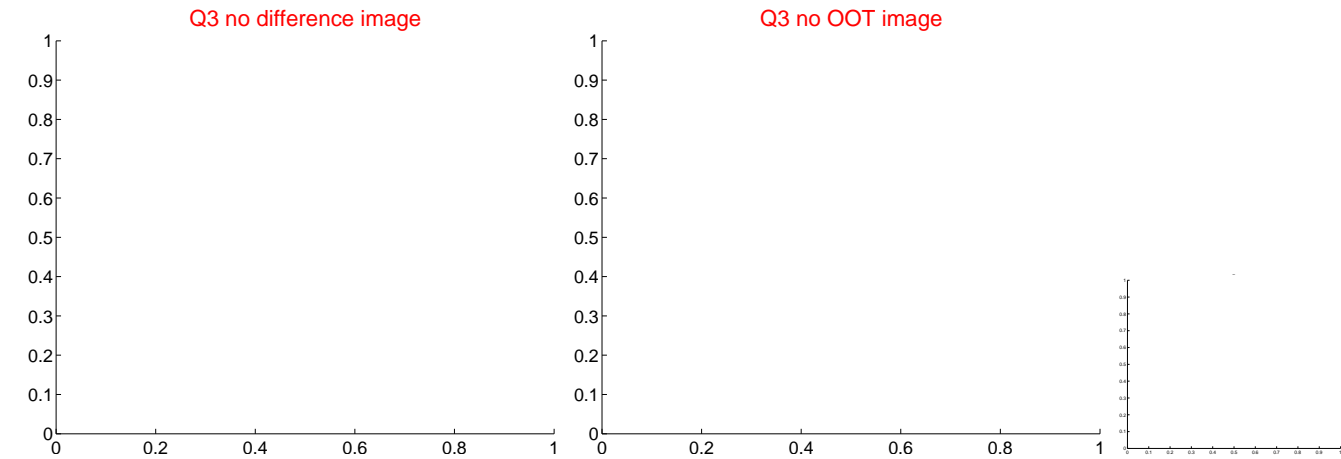
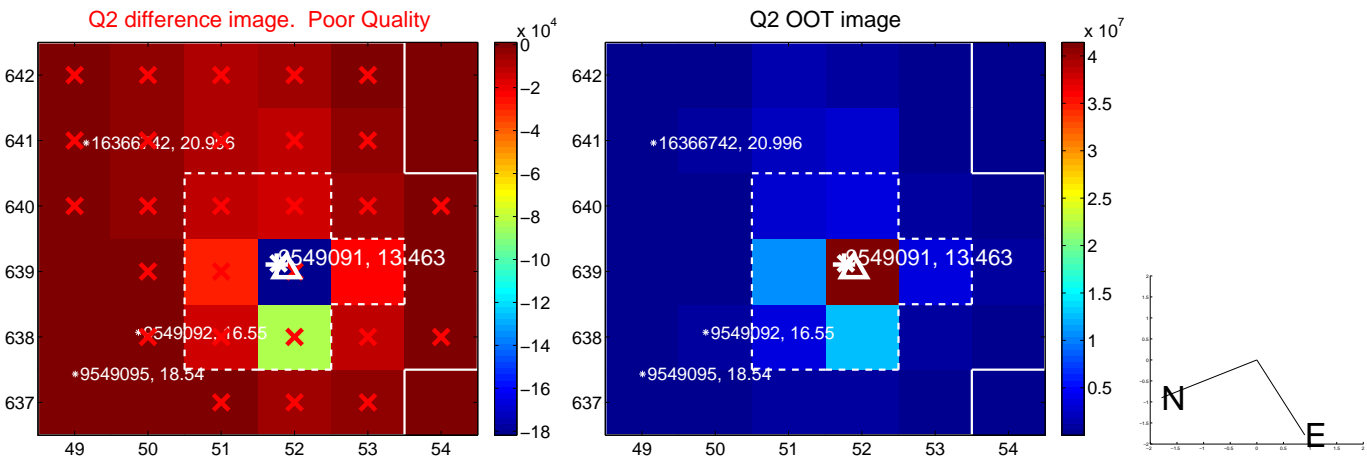
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.227 ± 0.155	1.46	0.227 ± 0.155	-0.003 ± 0.122
PRF-fit source offset from KIC position	0.245 ± 0.161	1.53	0.214 ± 0.164	0.119 ± 0.148
photometric centroid source offset	0.67 ± 0.45	1.47	0.58 ± 0.45	-0.32 ± 0.47

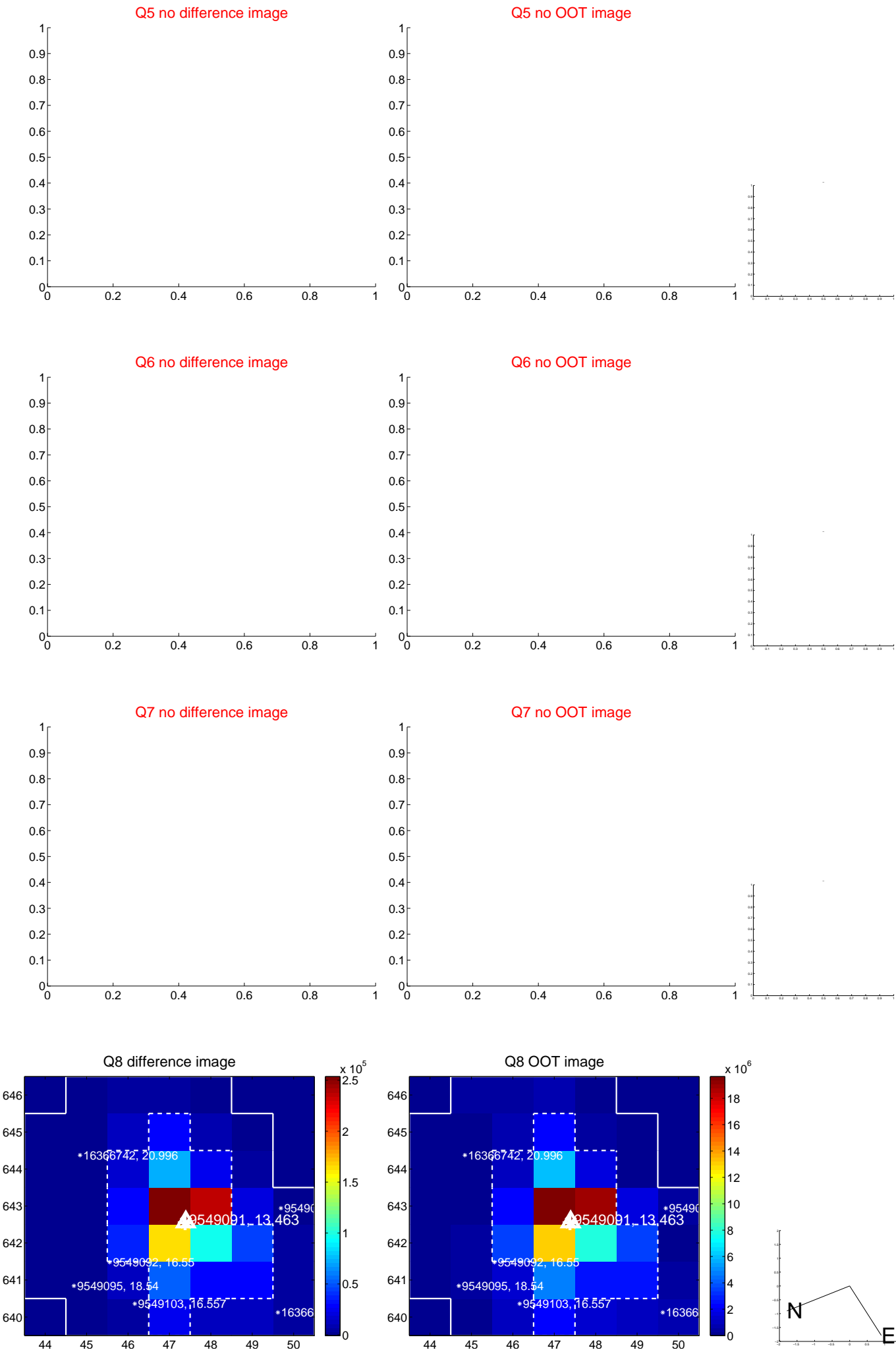


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



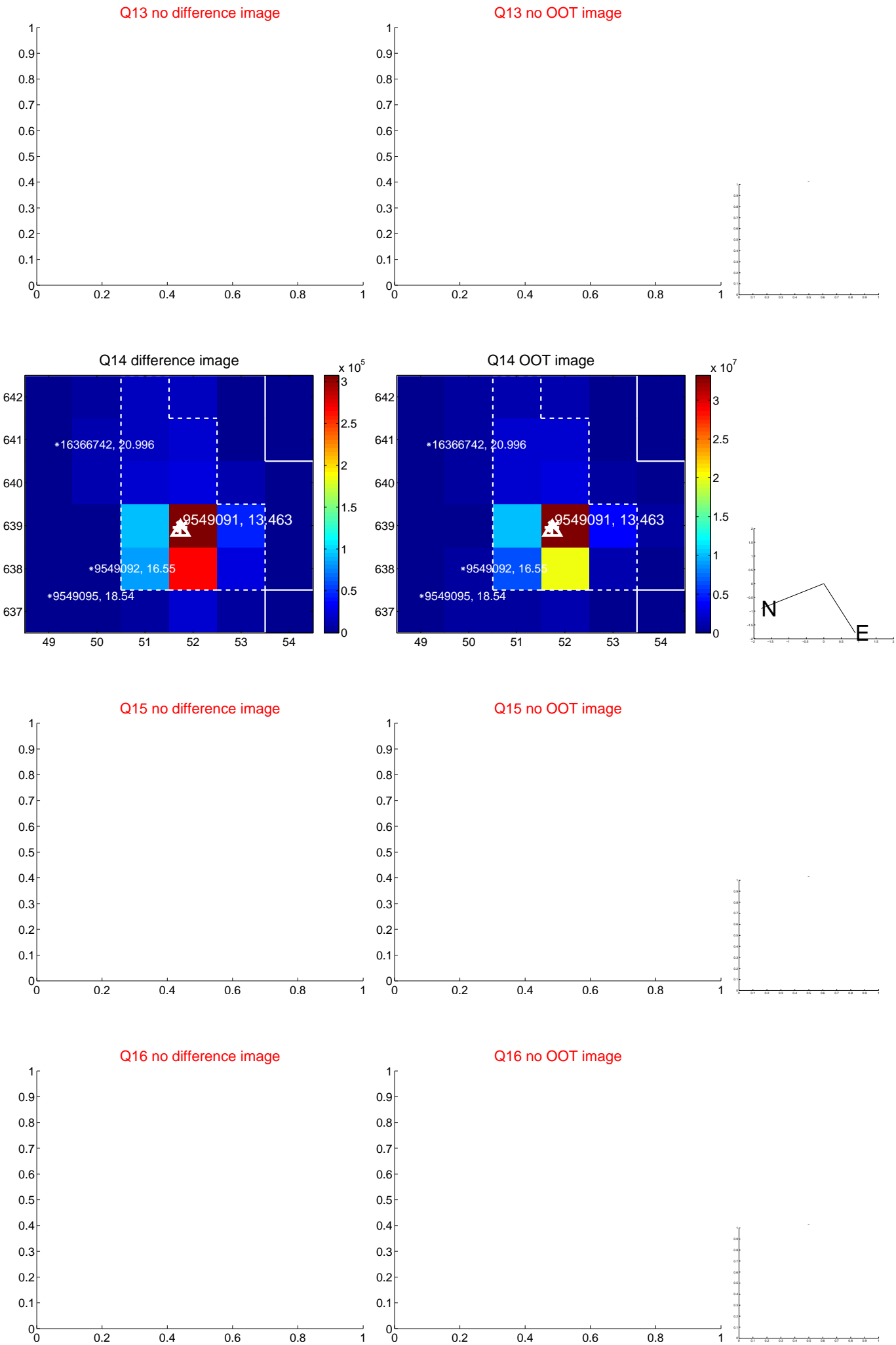
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



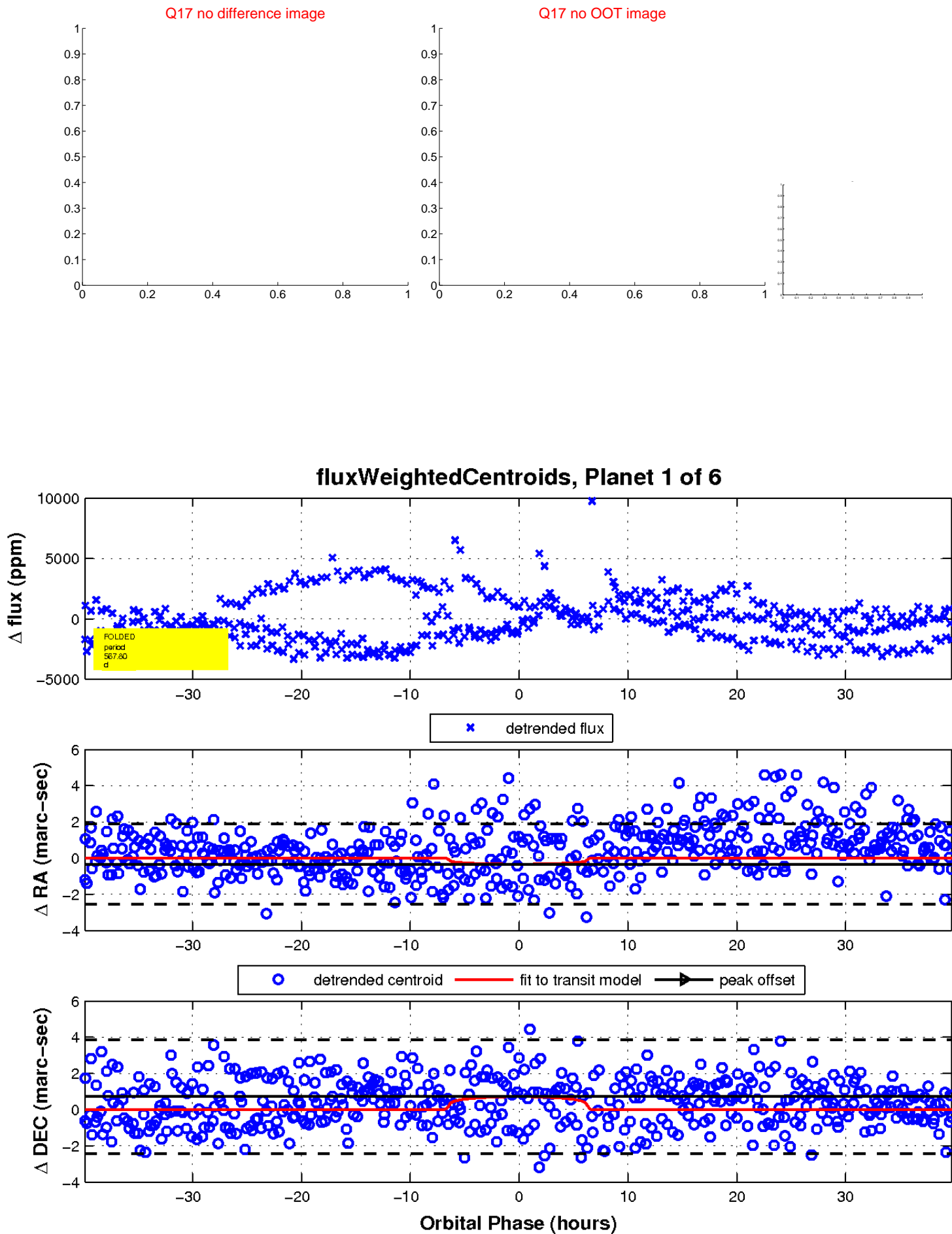
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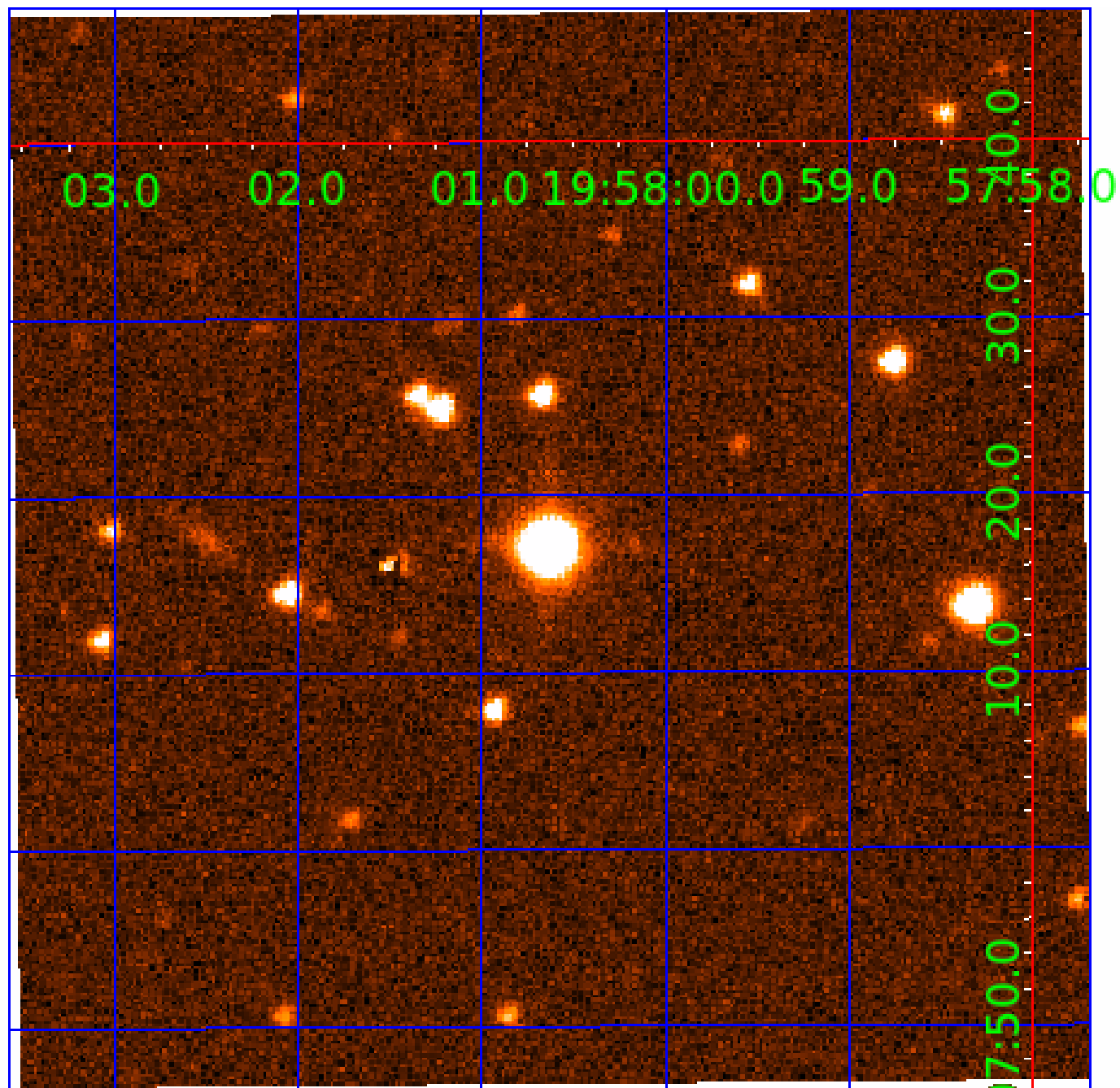


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009549091

Q1-17 DR25 TCE Parameters

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Robovetter Results

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009549091-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
009549091-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009549091-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009549091-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_FEW_DIFFS

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

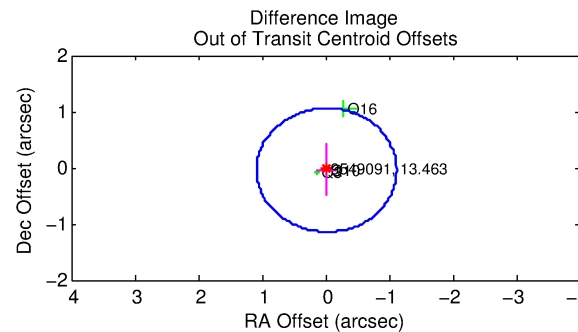
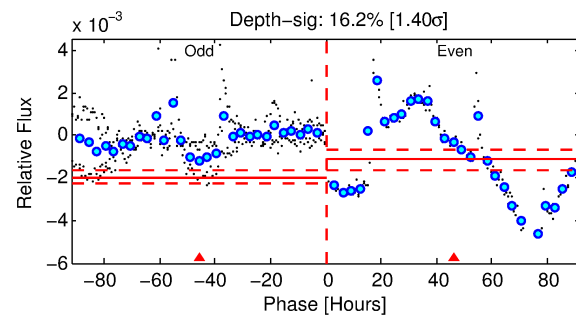
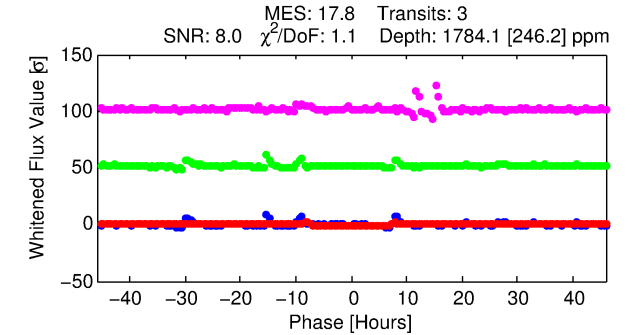
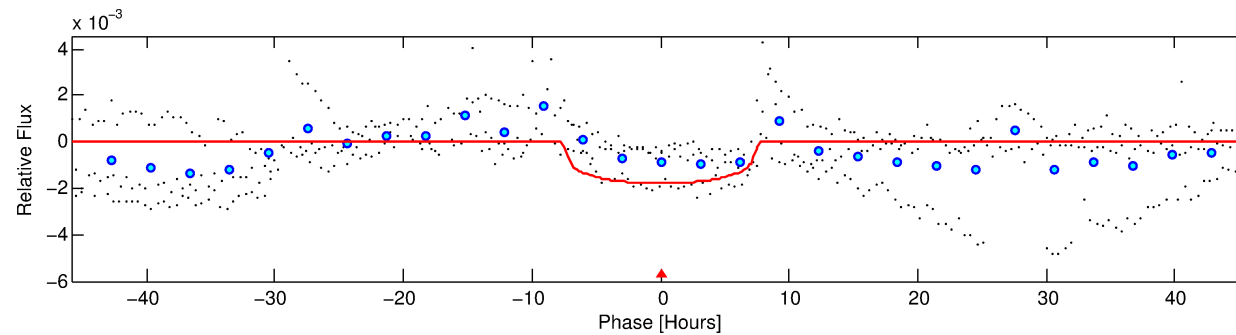
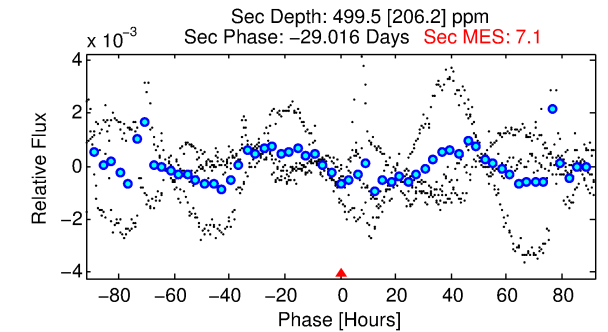
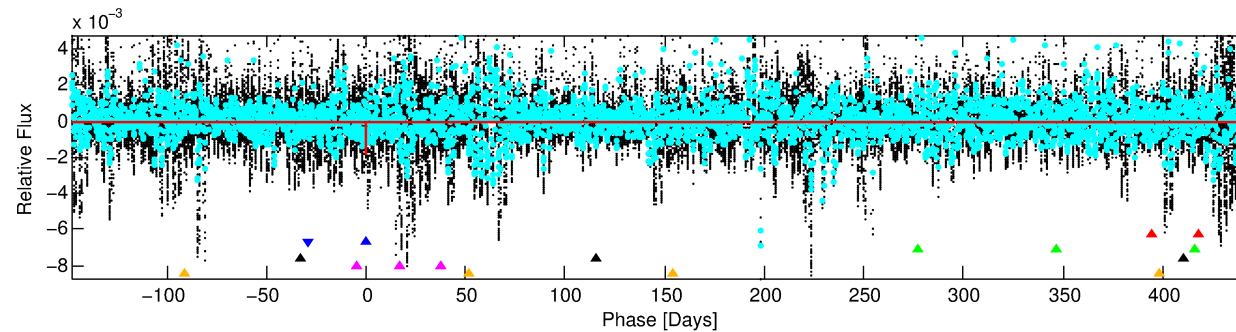
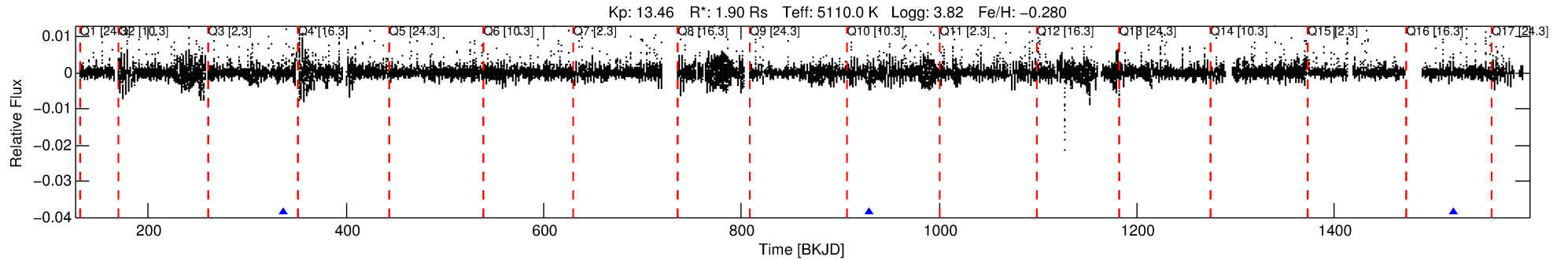
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009549091-02

No Significant Match Found

DV One-Page Summary

KIC: 9549091 Candidate: 2 of 6 Period: 591.690 d



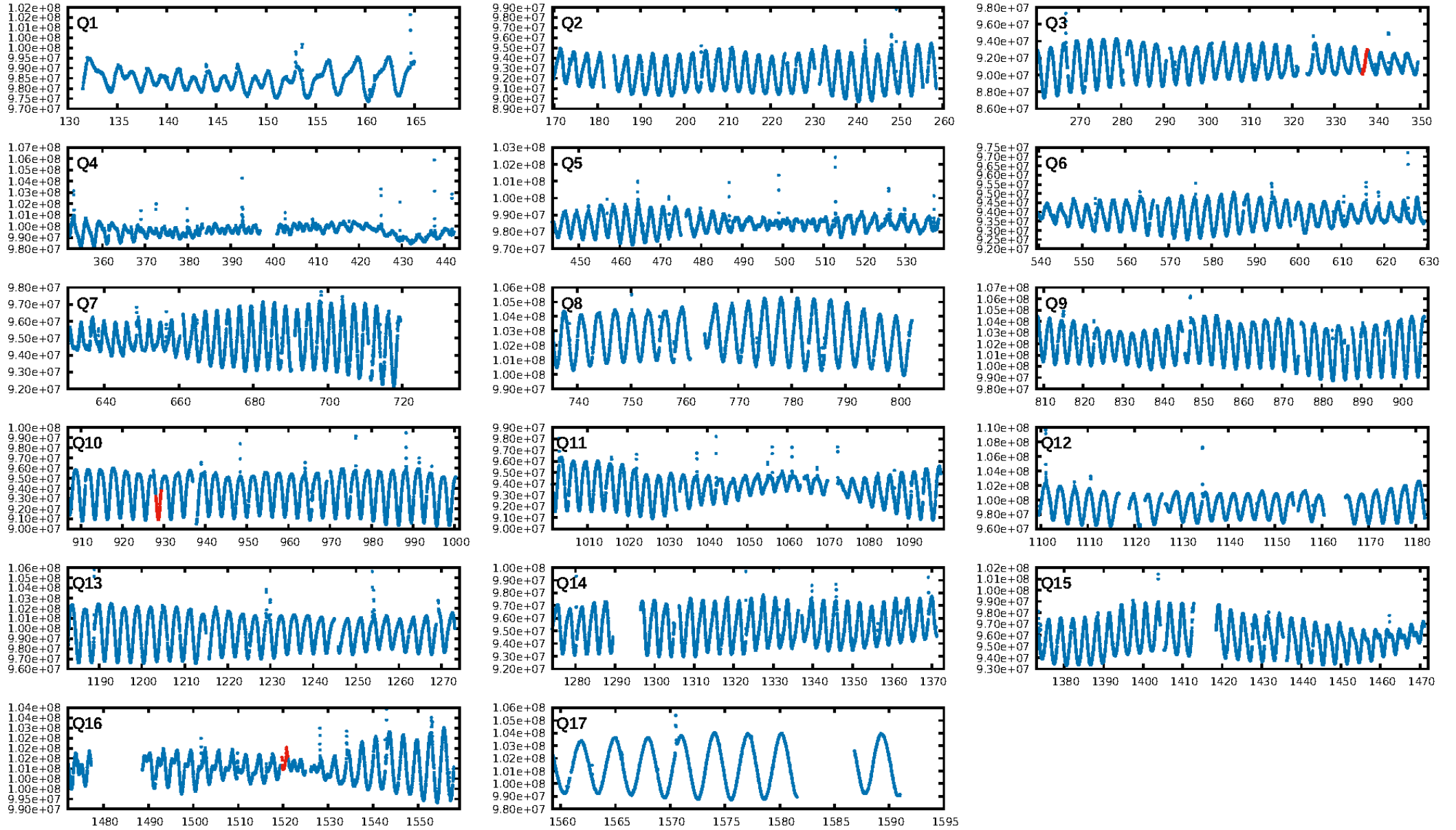
DV Fit Results:

Period = 591.68990 [0.00577] d
Epoch = 337.0162 [0.0075] BKJD
Rp/R* = 0.0377 [0.0026]
a/R* = 306.94 [6.20]
b = 0.00 [3200.05]
Seff = 1.28 [1.70]
Teq = 271 [90] K
Rp = 7.82 [5.73] Re
a = 1.3150 [1.0343] AU
Ag = 7775.17 [10867.80] [0.72σ]
Teffp = 3934 [444] K [8.08σ]

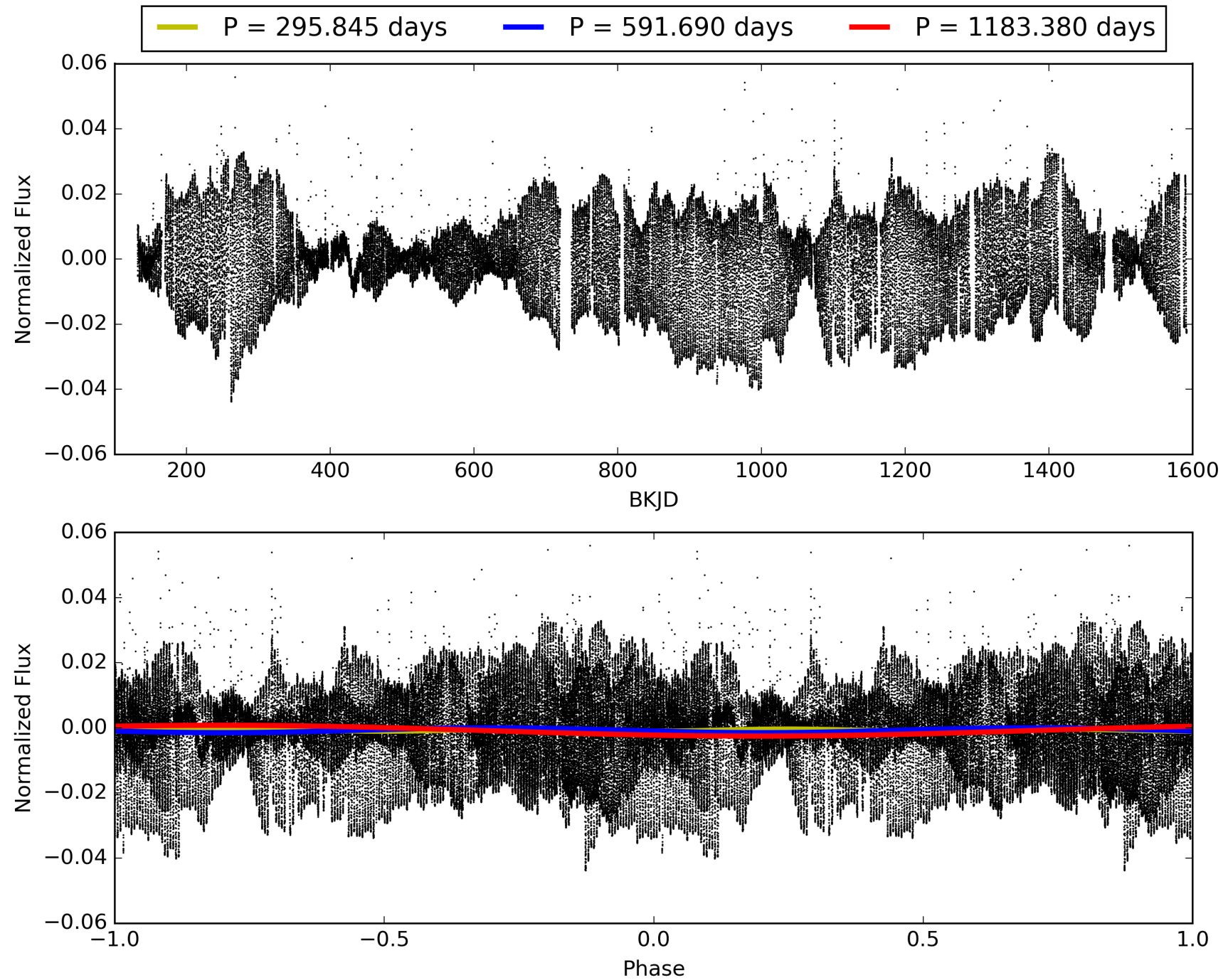
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [28.96σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 3.1%
ModelChiSquareGof-sig: 99.9%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 3.56
Centroid-sig: 2.6%
Centroid-so: 0.328 arcsec [0.84σ]
OotOffset-rm: 0.047 arcsec [0.13σ]
OotOffset-st: 1/1/1/0 [3]
KicOffset-rm: 0.132 arcsec [0.32σ]
KicOffset-st: 1/1/1/0 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

TCE 009549091-02, PDC Light Curves

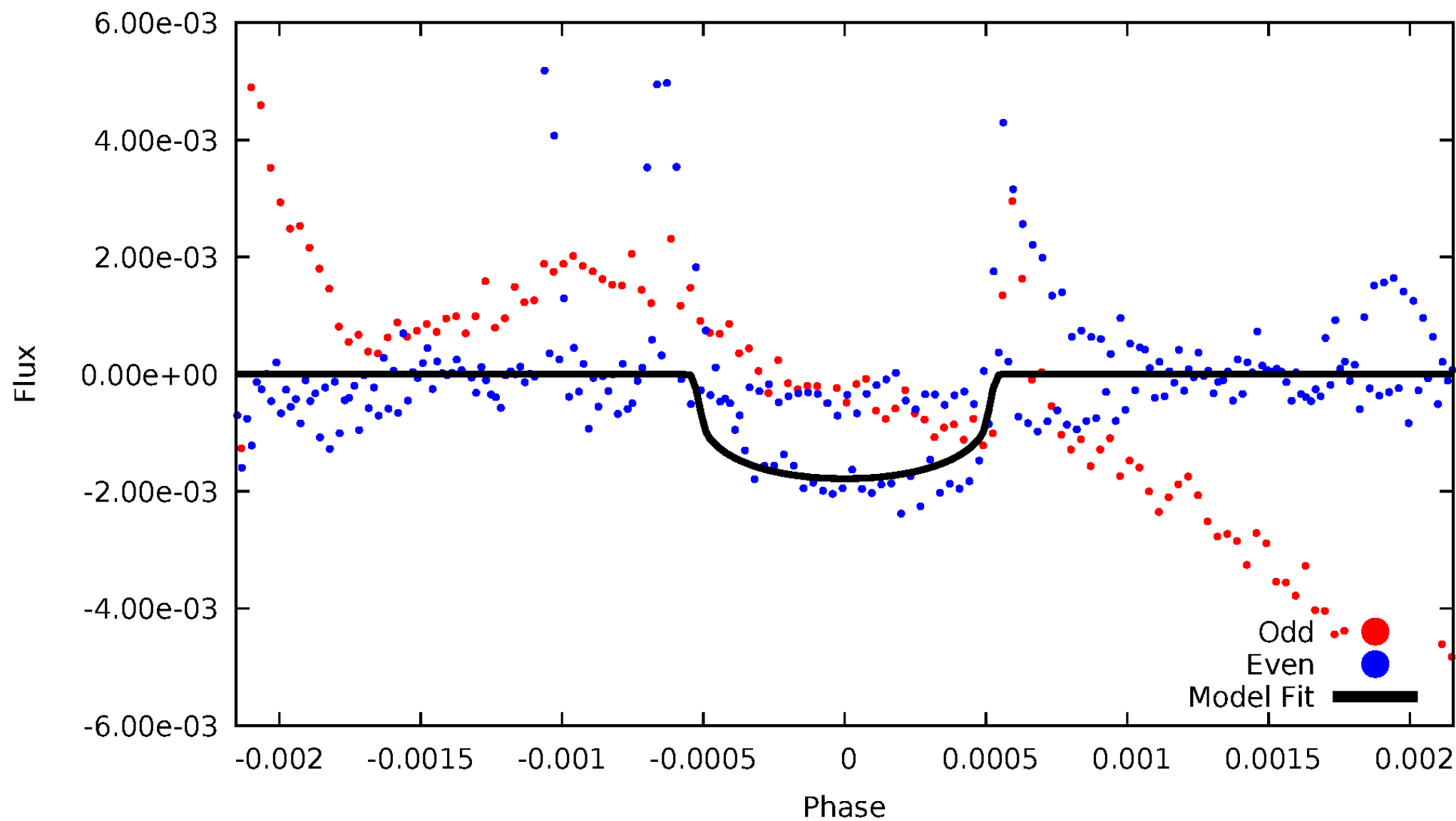


TCE 009549091-02



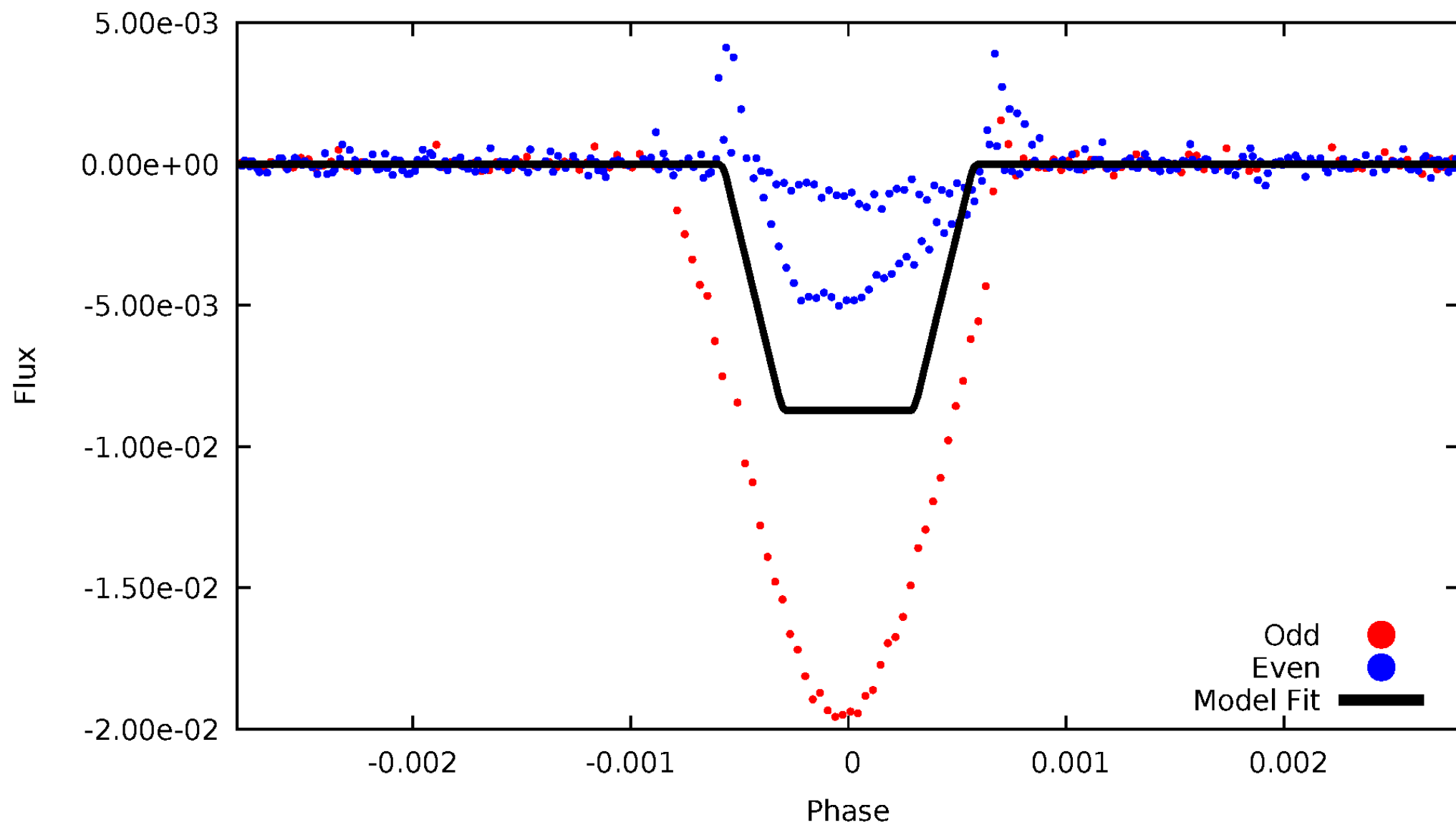
DV Odd/Even

TCE 009549091-02



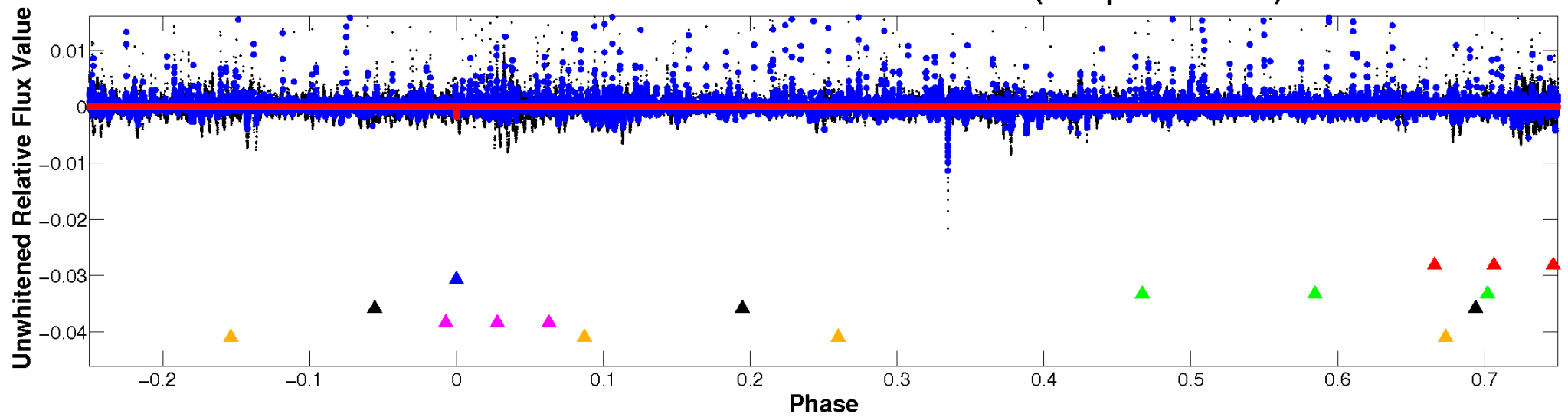
ALT Odd/Even

TCE 009549091-02

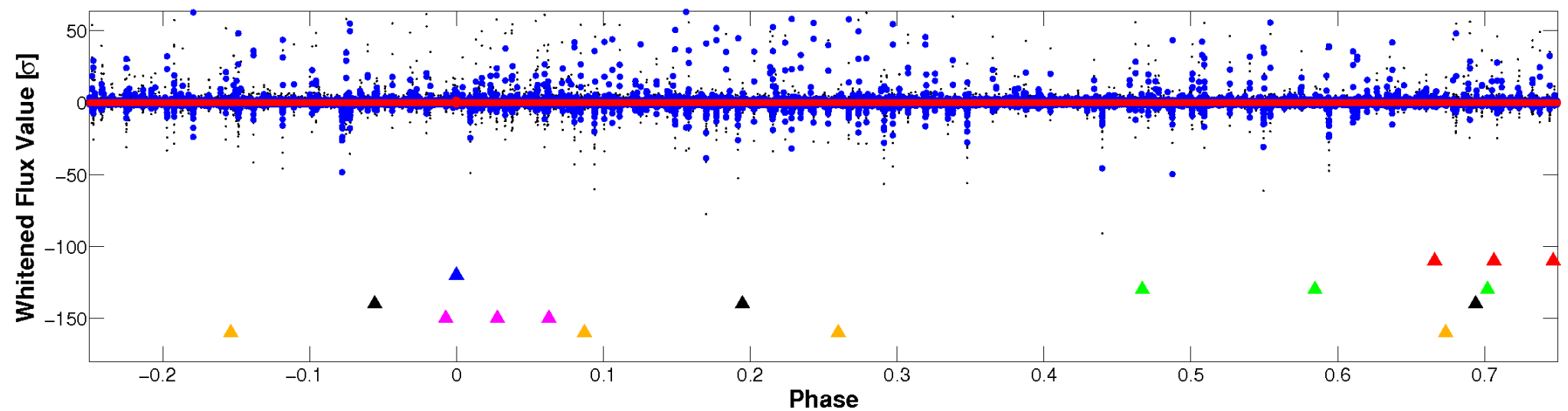


Non-Whitened Vs. Whitened Light Curve

Planet 2 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

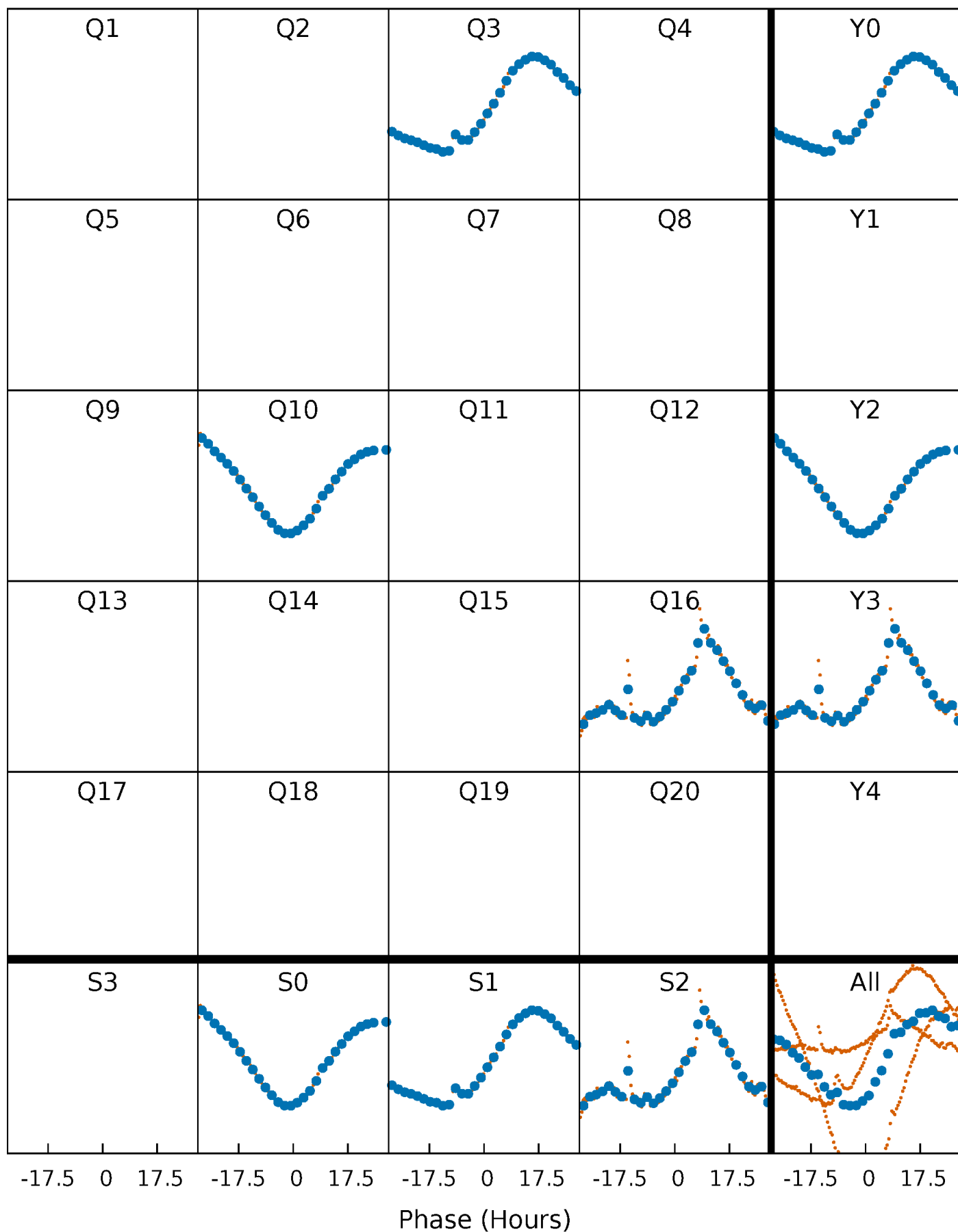


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



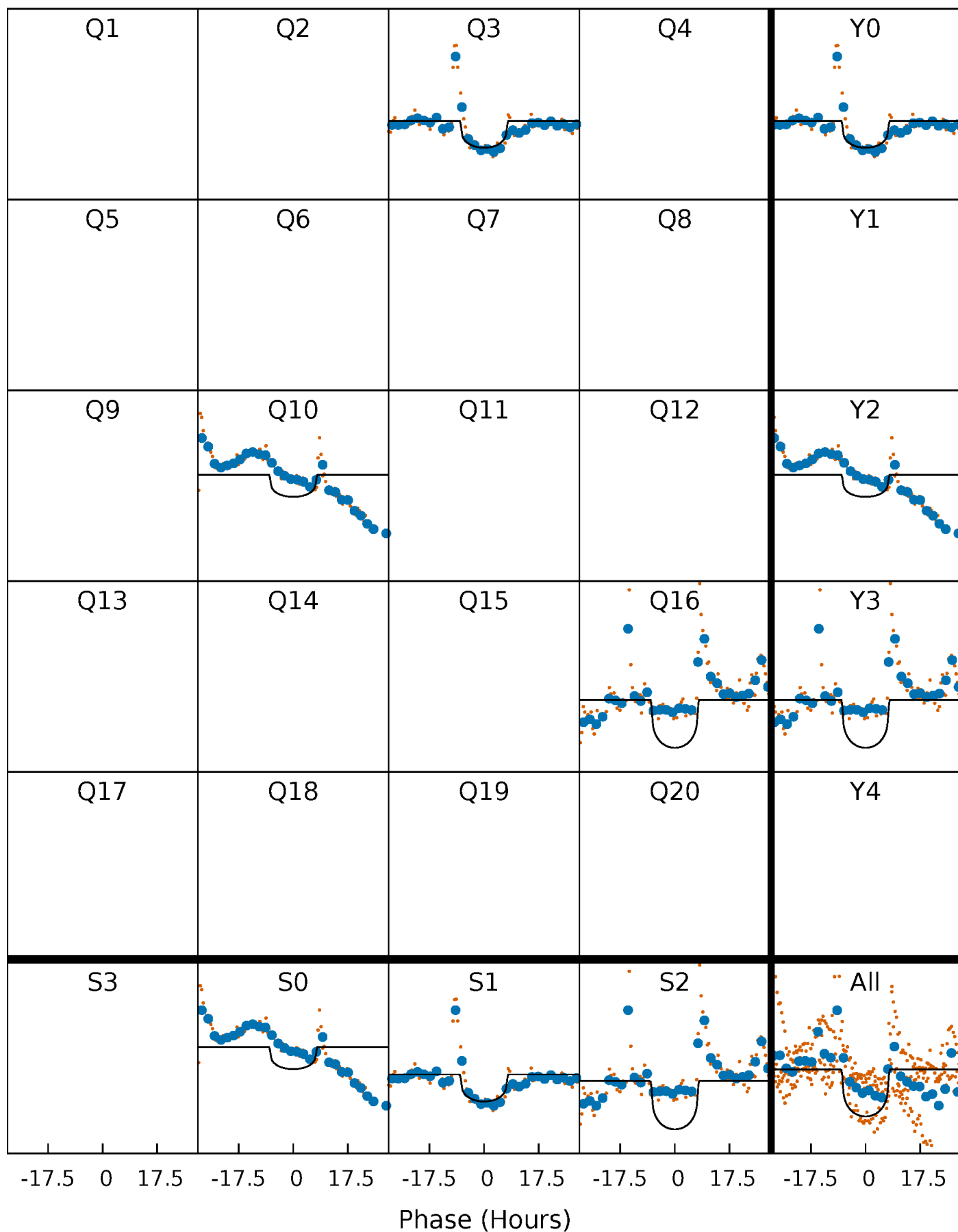
PDC Quarter-Phased Transit Curves

TCE 009549091-02 P=591.689902 Days $T_0=337.016250$ (BKJD)



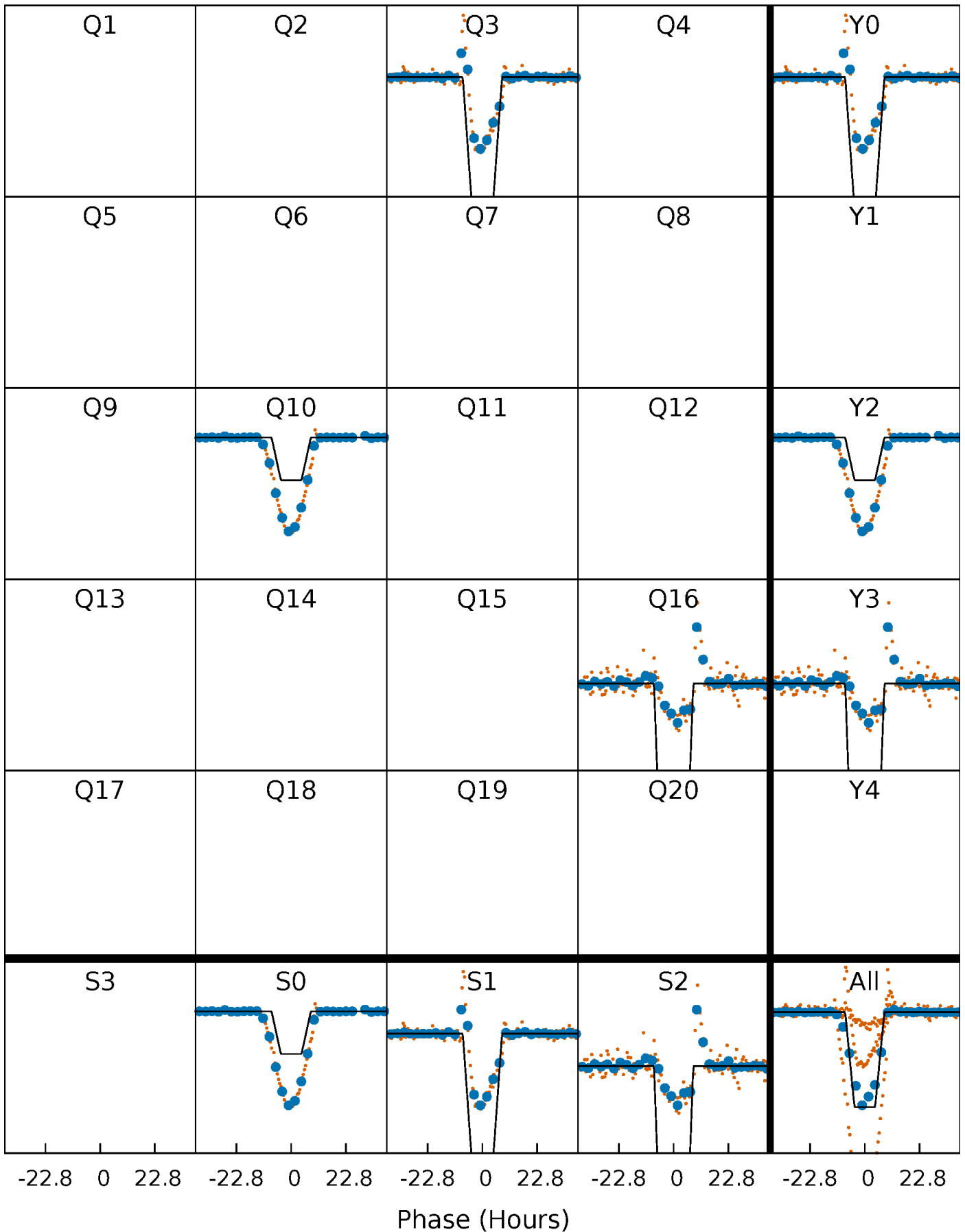
DV Quarter-Phased Transit Curves

TCE 009549091-02 $P=591.689902$ Days $T_0=337.016250$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

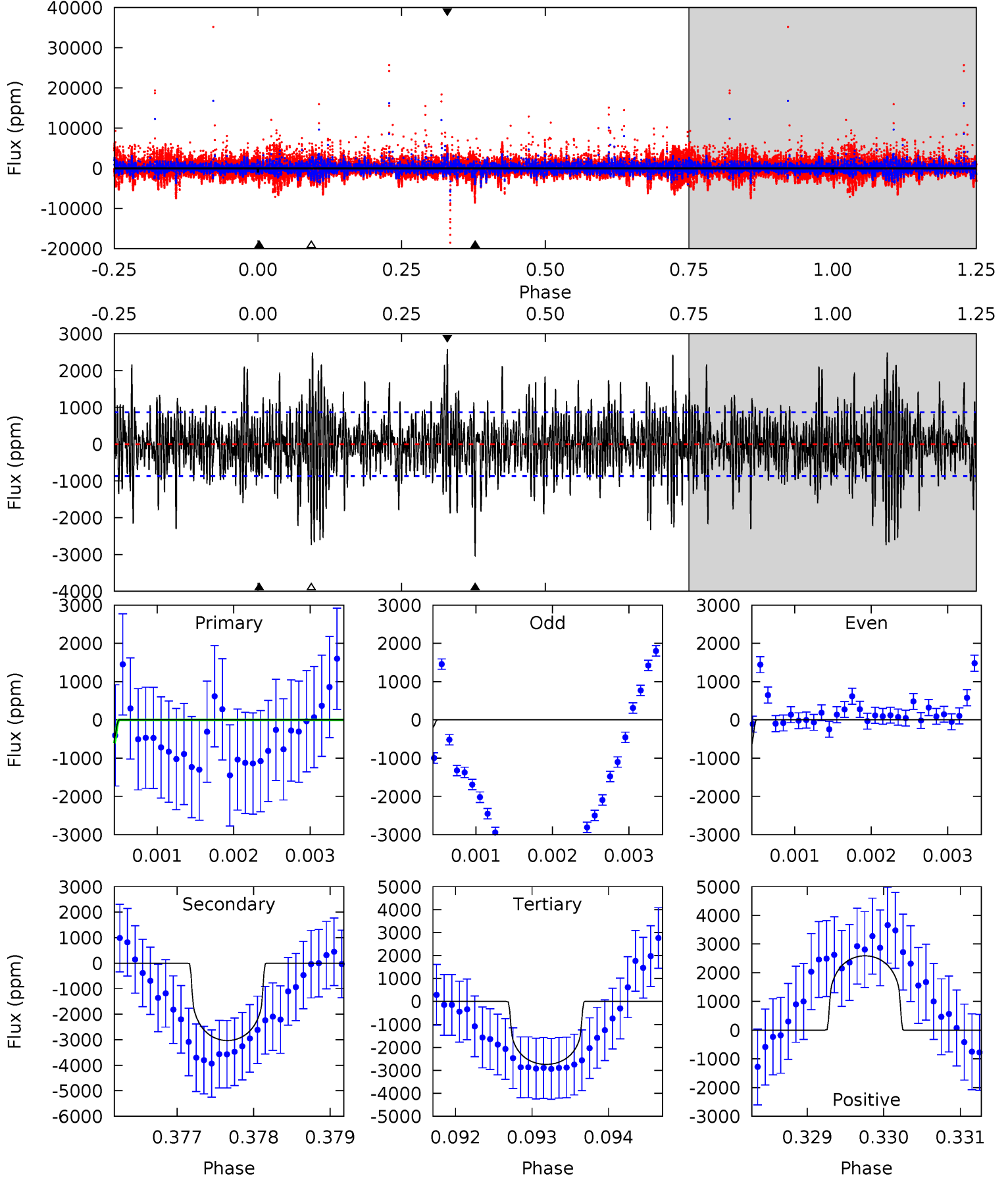
TCE 009549091-02 P=591.687786 Days $T_0=336.955564$ (BKJD)



DV Model-Shift Uniqueness Test

009549091-02, P = 591.689902 Days, E = 337.016250 Days

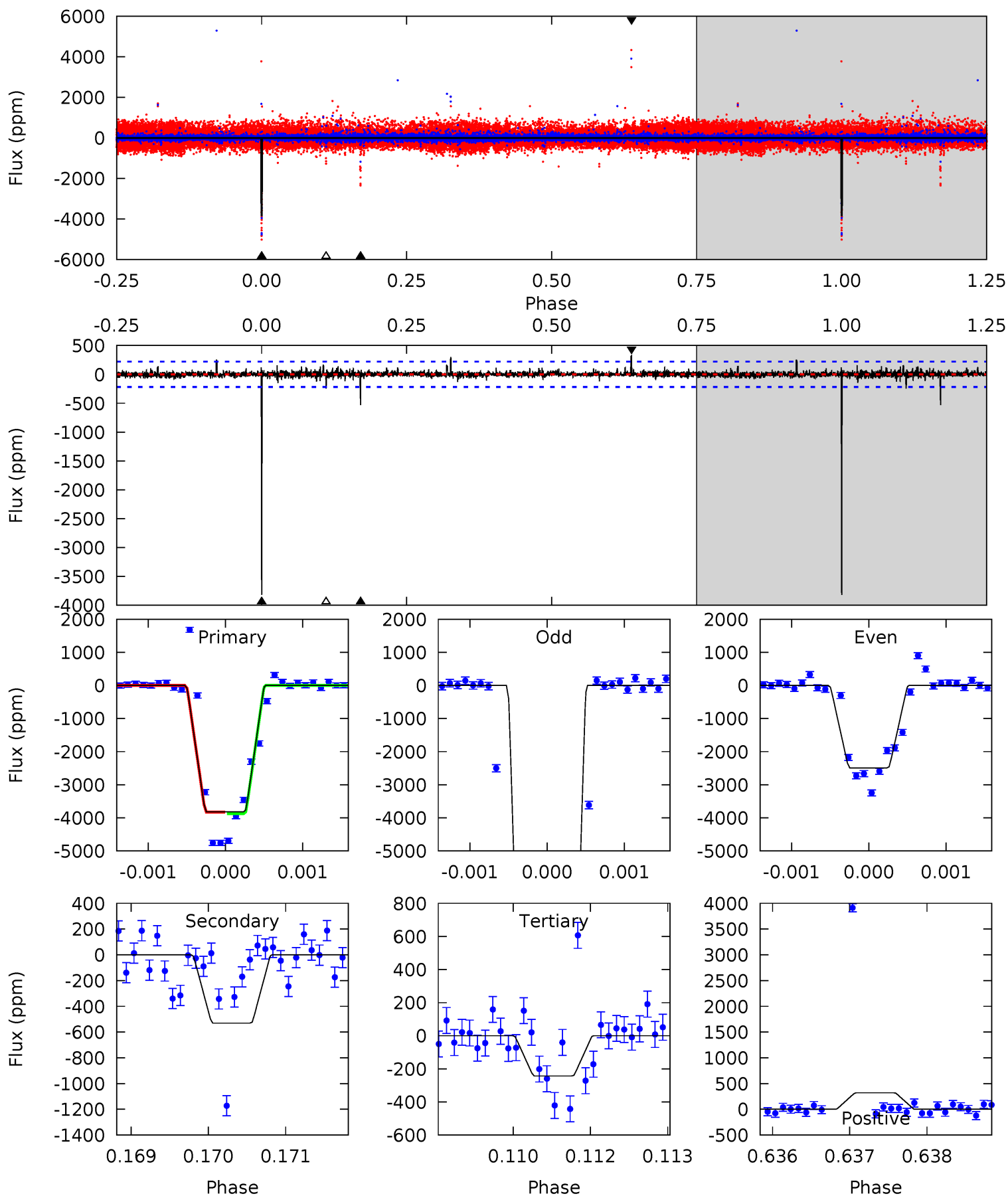
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.34	19.0	17.2	16.2	5.43	3.26	4.53	-11.8	-10.9	1.83	2.77	1.68	2.10	0.46	1.26



Alt Model-Shift Uniqueness Test

009549091-02, P = 591.687786 Days, E = 336.955564 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
94.6	13.2	6.02	7.96	5.43	3.25	0.68	88.6	86.7	7.13	5.19	265.2	1.93	0.08	0.59



Stellar Parameters For KIC 009549091

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5110^{+153}_{-138}	$3.818^{+0.805}_{-0.345}$	$-0.280^{+0.300}_{-0.250}$	$1.900^{+1.387}_{-1.134}$	$0.867^{+0.254}_{-0.157}$	$0.178^{+2.804}_{-0.116}$
	+3%/-3%	+21%/-9%	+107%/-89%	+73%/-60%	+29%/-18%	+1576%/-65%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 009549091-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-3031 ± 160	$7.35^{+3.26}_{-2.27}$	366^{+69}_{-63}	6096^{+305}_{-291}	54276^{+55782}_{-27448}
Alt.	-531 ± 40	$18.47^{+7.25}_{-5.95}$	369^{+62}_{-68}	3124^{+74}_{-71}	1526^{+1834}_{-734}

T_{max} = Theoretical Maximum Planetary Temperature
 T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)
 A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{\text{obs}} \gg T_{\text{max}}$ AND $A_{\text{obs}} \gg 1.0$

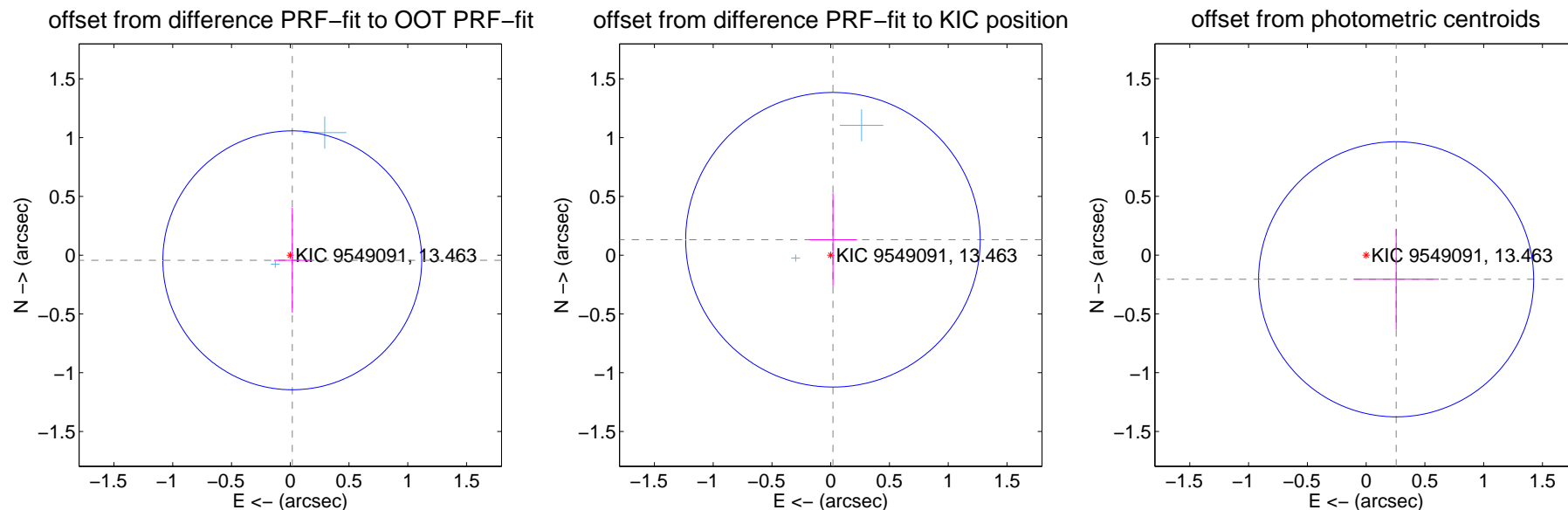
DV Centroid Data

Supplemental centroid analysis for 009549091-02. Kepler magnitude: 13.46. Transit SNR 8.01

There are 3 quarters with good PRF difference image offsets

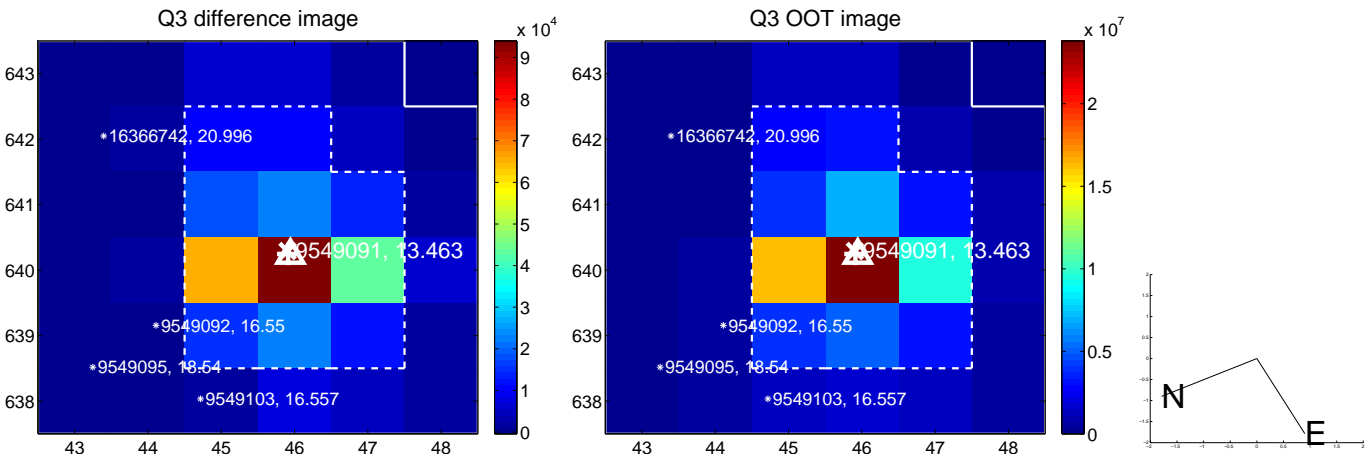
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.047 ± 0.367	0.13	-0.017 ± 0.154	-0.044 ± 0.446
PRF-fit source offset from KIC position	0.132 ± 0.418	0.32	-0.019 ± 0.205	0.131 ± 0.395
photometric centroid source offset	0.33 ± 0.39	0.84	-0.26 ± 0.36	-0.21 ± 0.43



Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

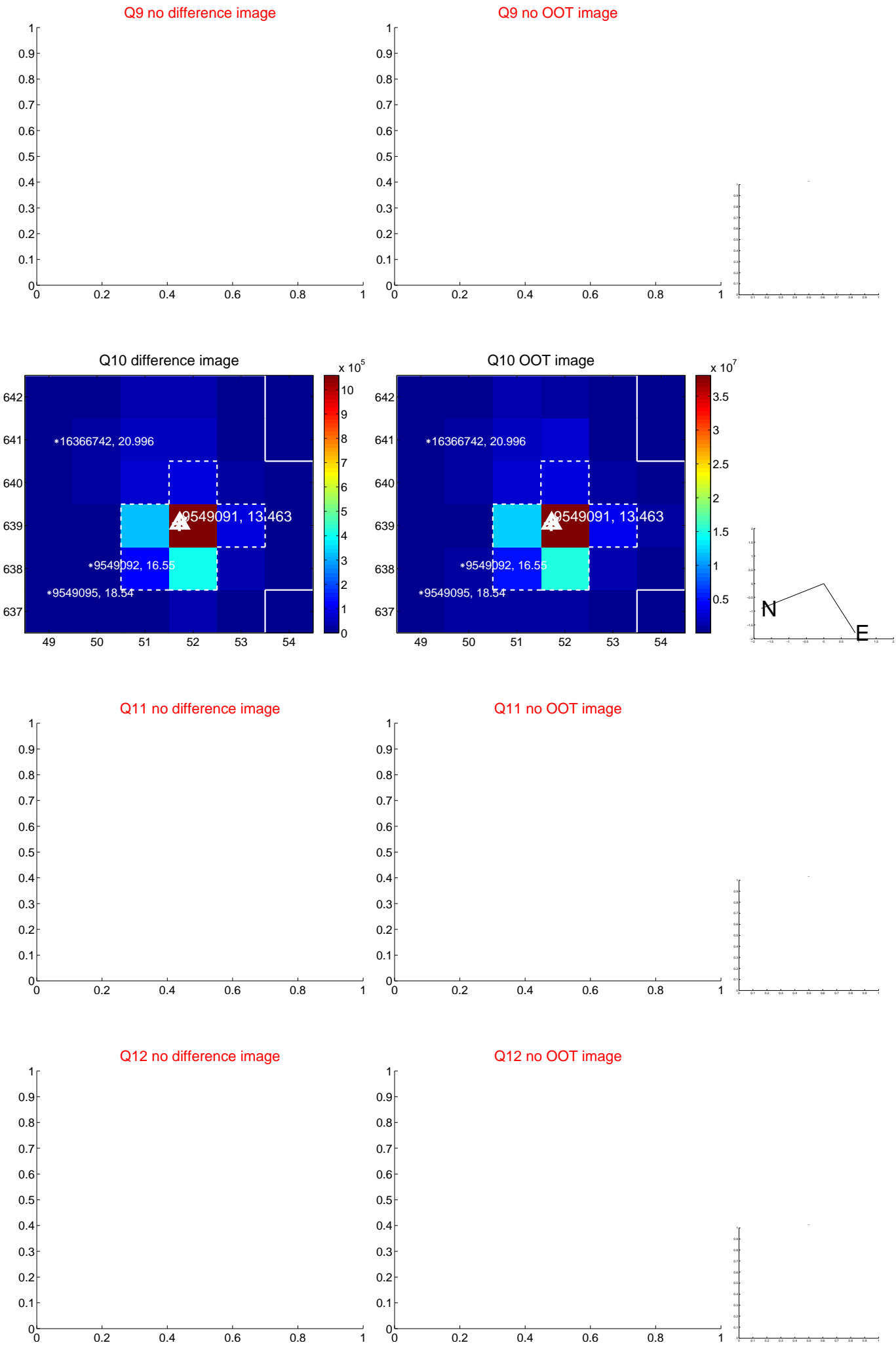
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



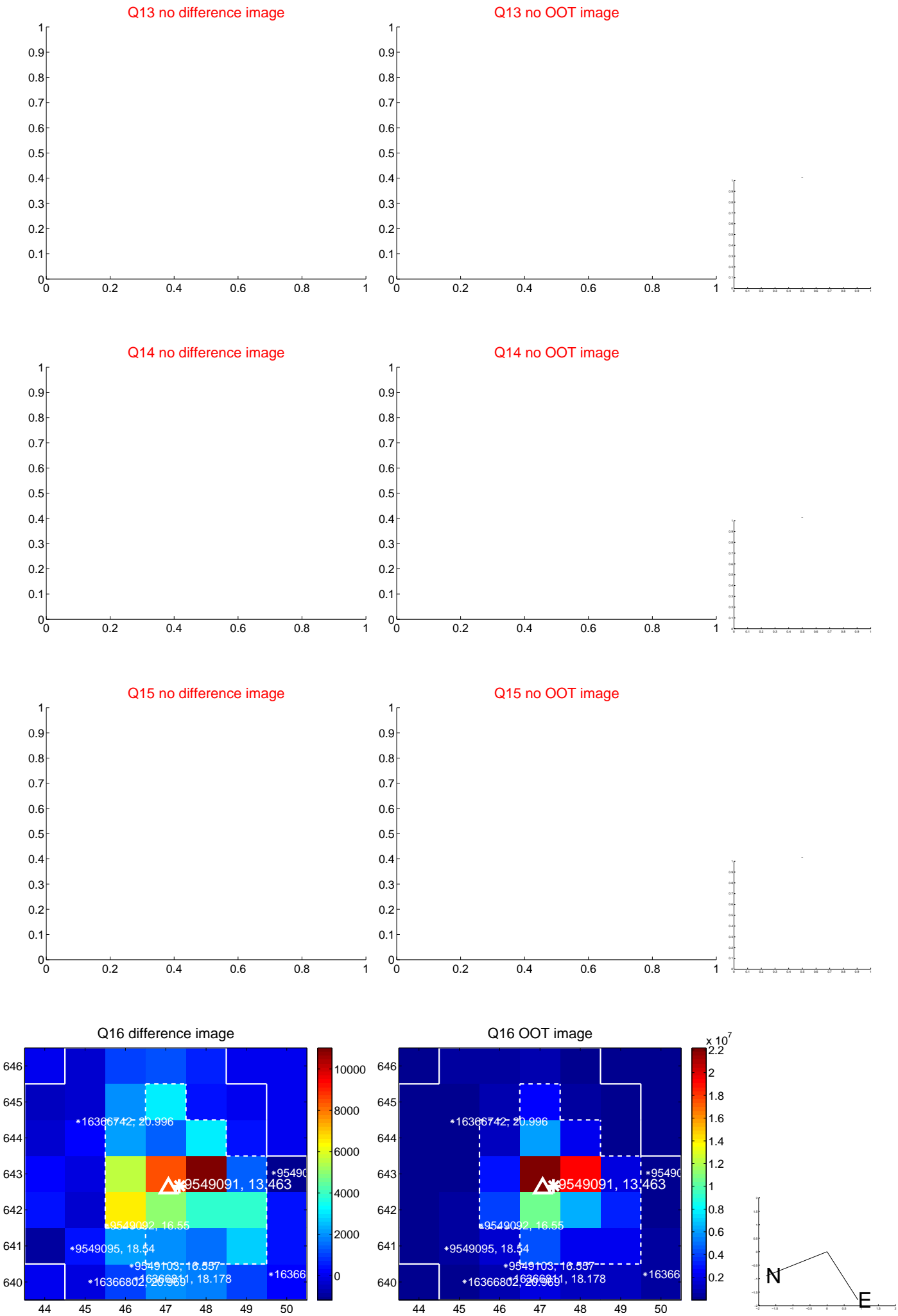
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



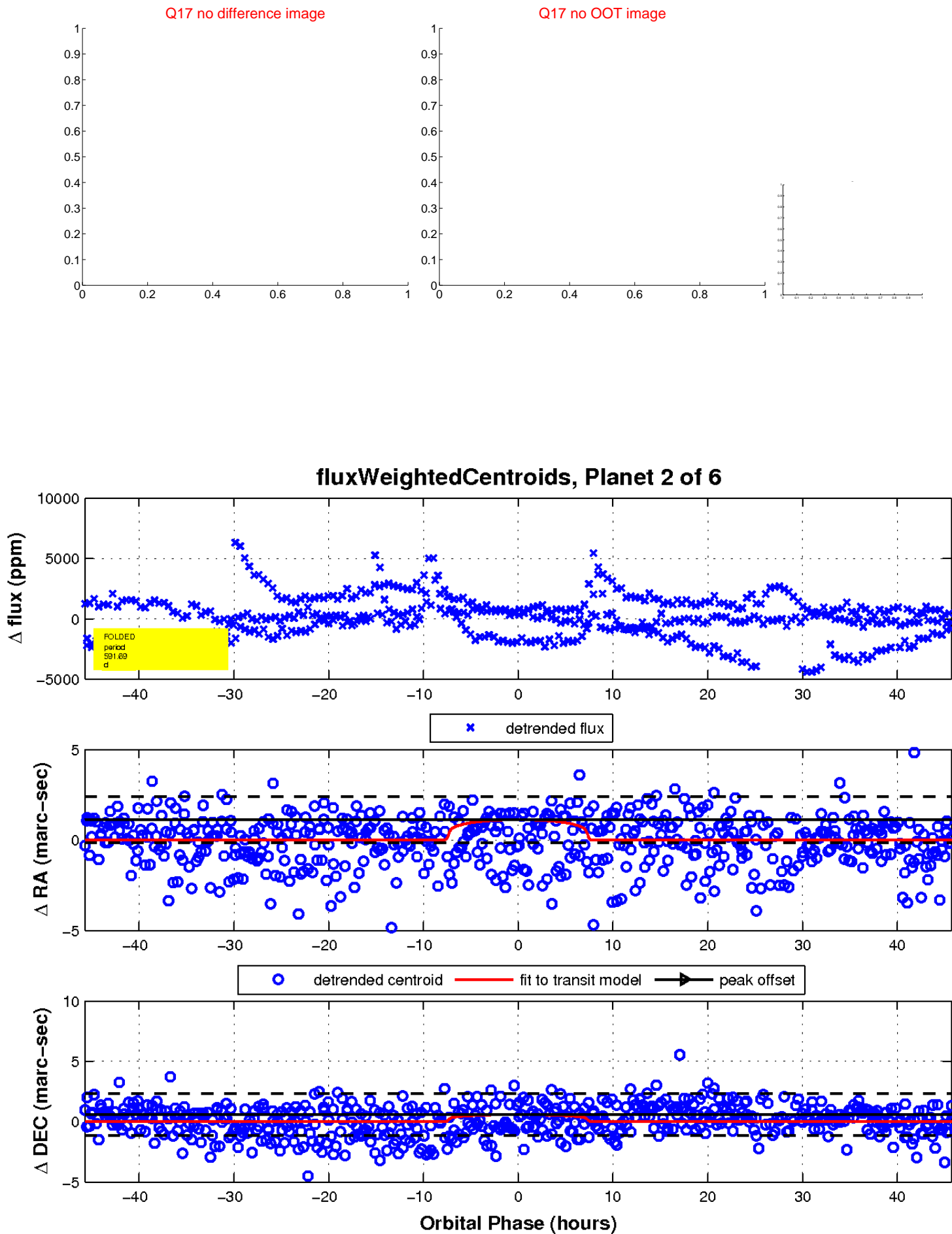
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

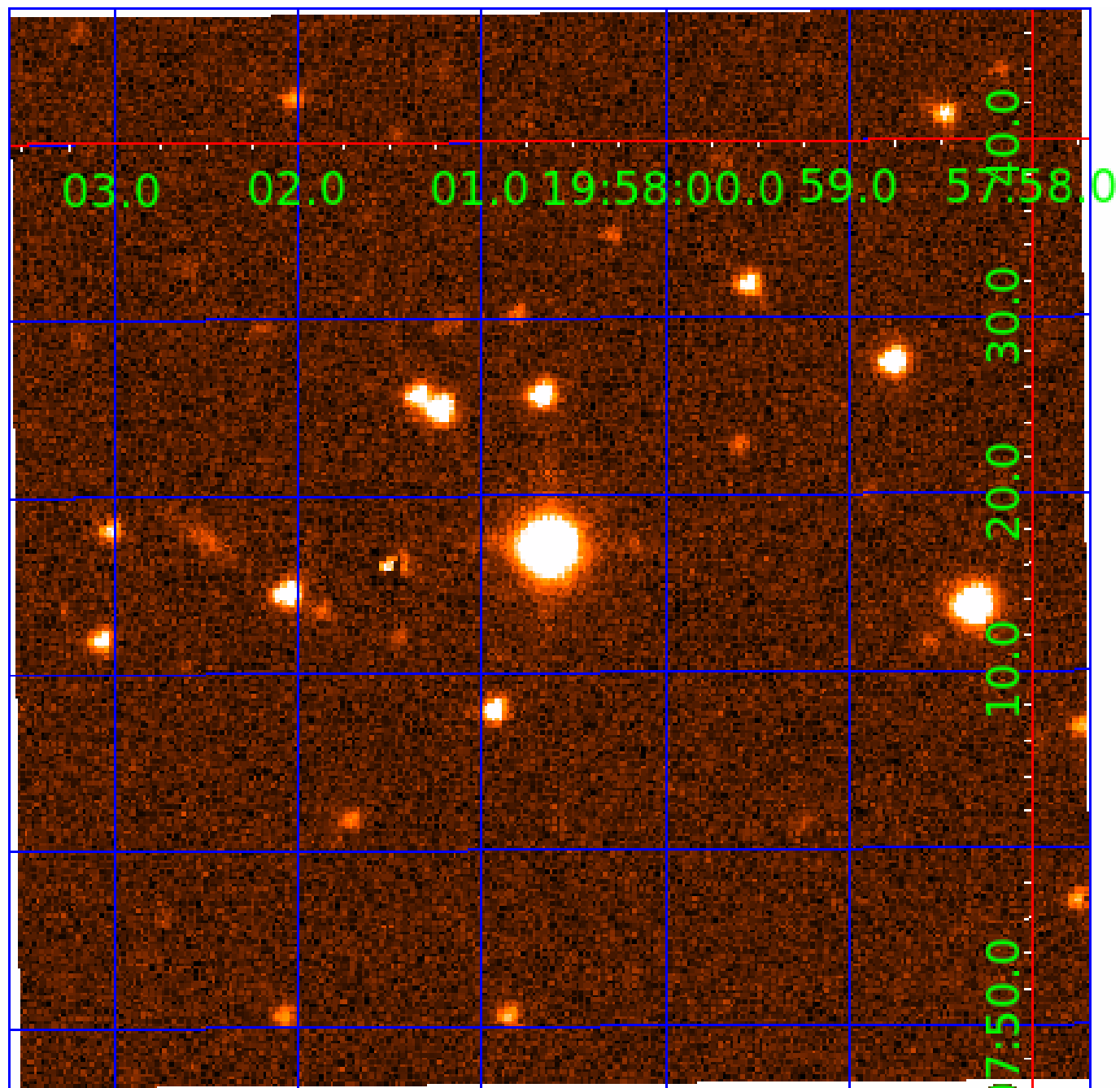


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009549091

Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R_{\star} (R_{\odot})	T_{\star} (K)	R_p (R_{\oplus})	S_p (S_{\oplus})
009549091-01	OBS	No	567.800060	187.196022	1602.2	13.326	11.6	5.6	1.90	5110	7.44	1.35
009549091-02	OBS	No	591.689902	337.016250	1784.1	15.282	17.8	8.0	1.90	5110	7.82	1.27
009549091-03	OBS	No	522.159192	160.717362	571.2	10.500	15.2	-1.0	1.90	5110	4.43	1.51
009549091-04	OBS	No	443.544138	452.231287	1137.8	6.093	15.1	7.0	1.90	5110	7.77	1.87
009549091-05	OBS	No	570.902531	374.292991	841.0	7.949	13.3	5.0	1.90	5110	5.84	1.34
009549091-06	OBS	No	346.974738	388.573649	1024.0	6.470	12.9	6.3	1.90	5110	12.19	2.60

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009549091-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009549091-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
009549091-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
009549091-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009549091-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009549091-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_FEW_DIFFS

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

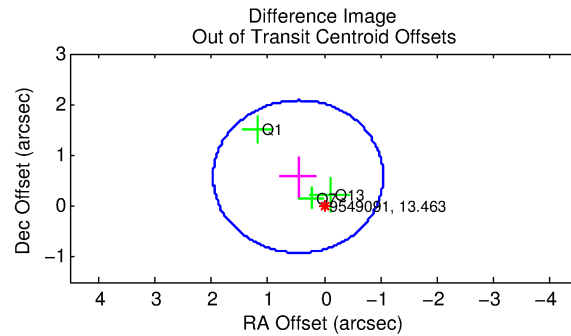
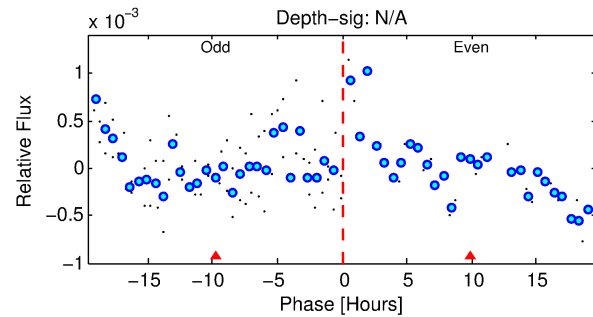
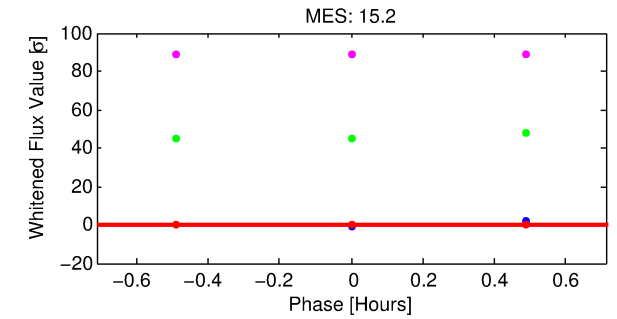
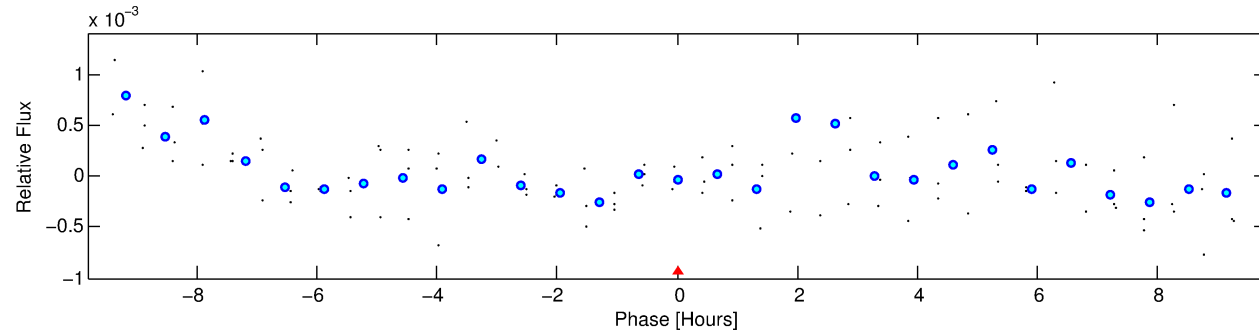
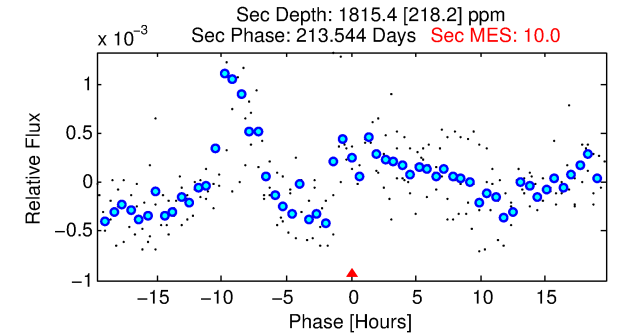
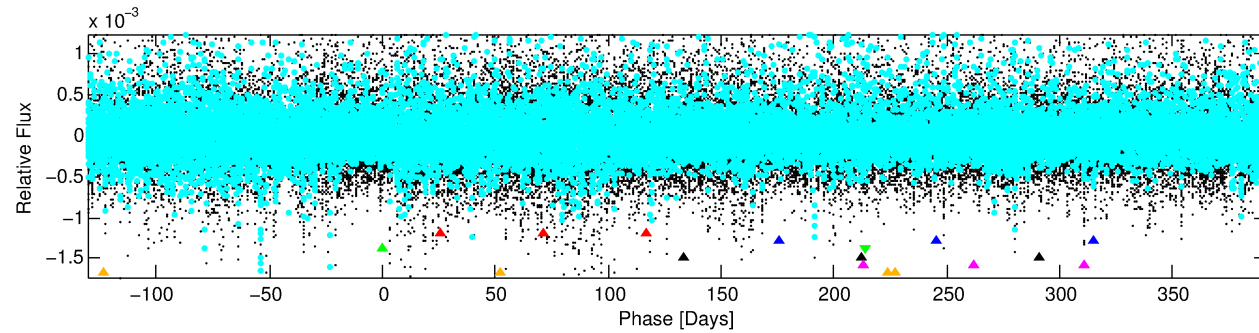
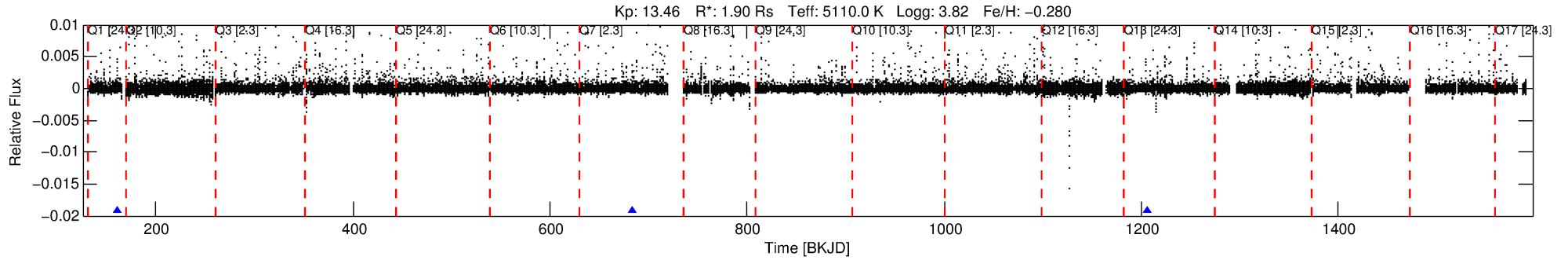
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009549091-03

No Significant Match Found

DV One-Page Summary

KIC: 9549091 Candidate: 3 of 6 Period: 522.159 d



TPS TCE Results:

Period = 522.15919 d
Epoch = 160.7174 BKJD

DV fit results are unavailable

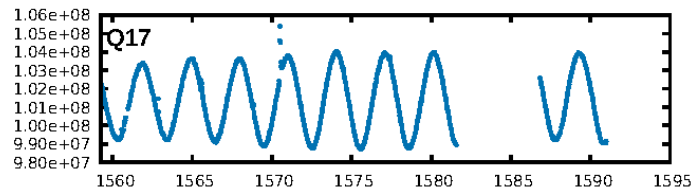
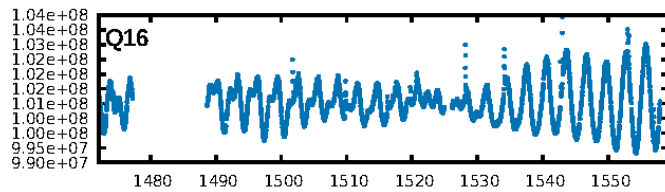
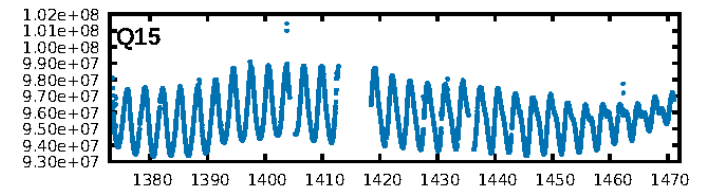
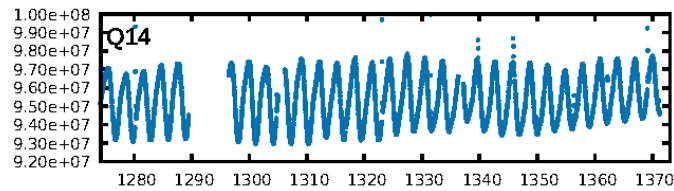
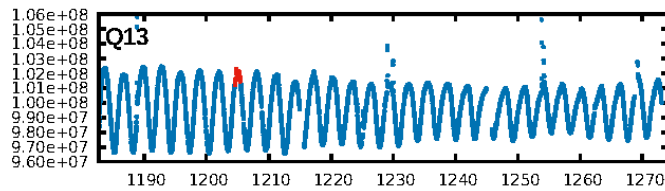
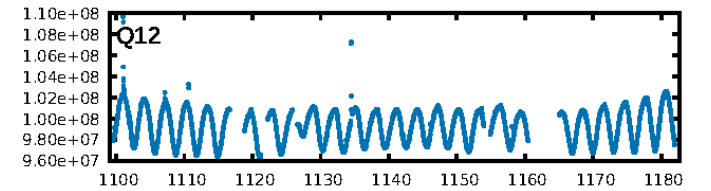
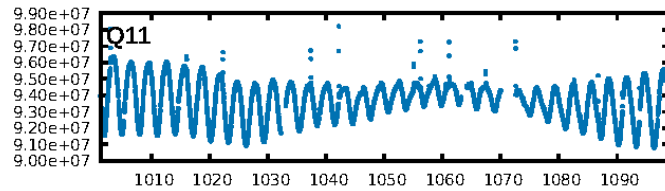
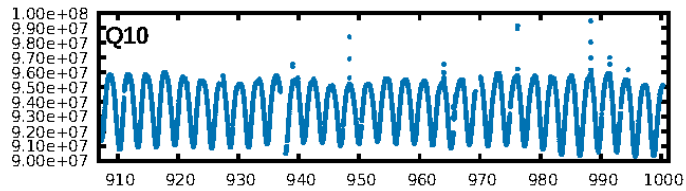
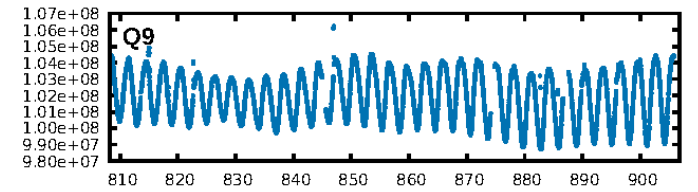
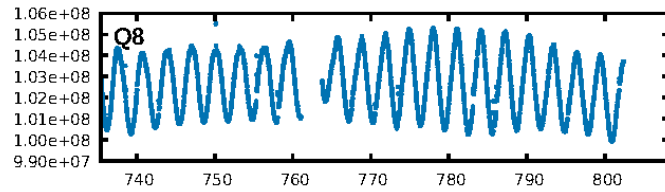
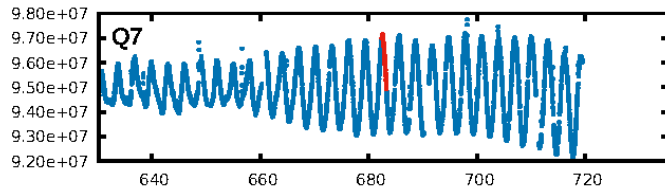
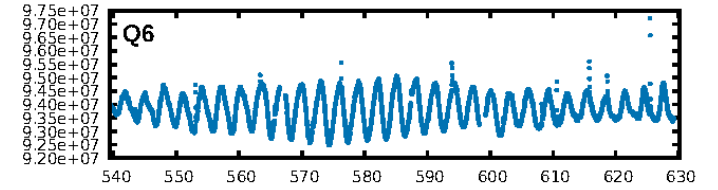
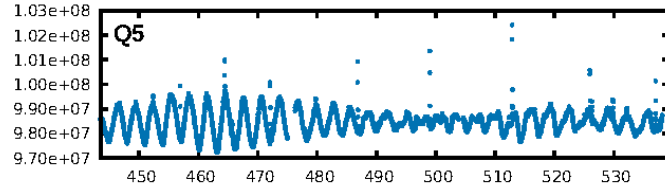
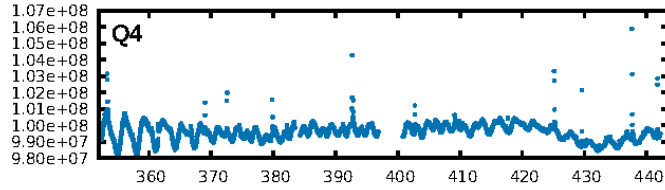
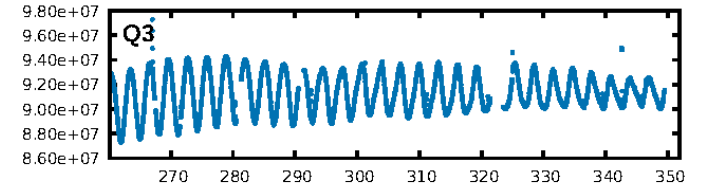
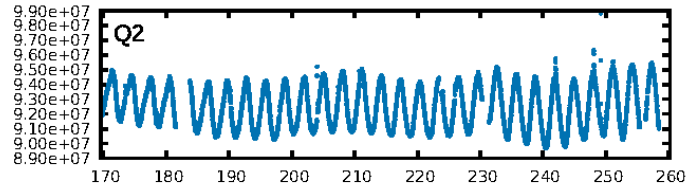
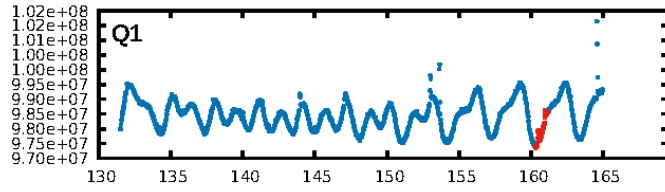
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [155.42σ]
LongPeriod-sig: 100.0% [64.57σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: 2.513
Centroid-sig: 17.4%
Centroid-so: 70.913 arcsec [1.10σ]
OotOffset-rm: 0.737 arcsec [1.47σ]
KicOffset-rm: 0.845 arcsec [1.40σ]
OotOffset-st: 0/1/0/2 [3]
KicOffset-st: 0/1/0/2 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

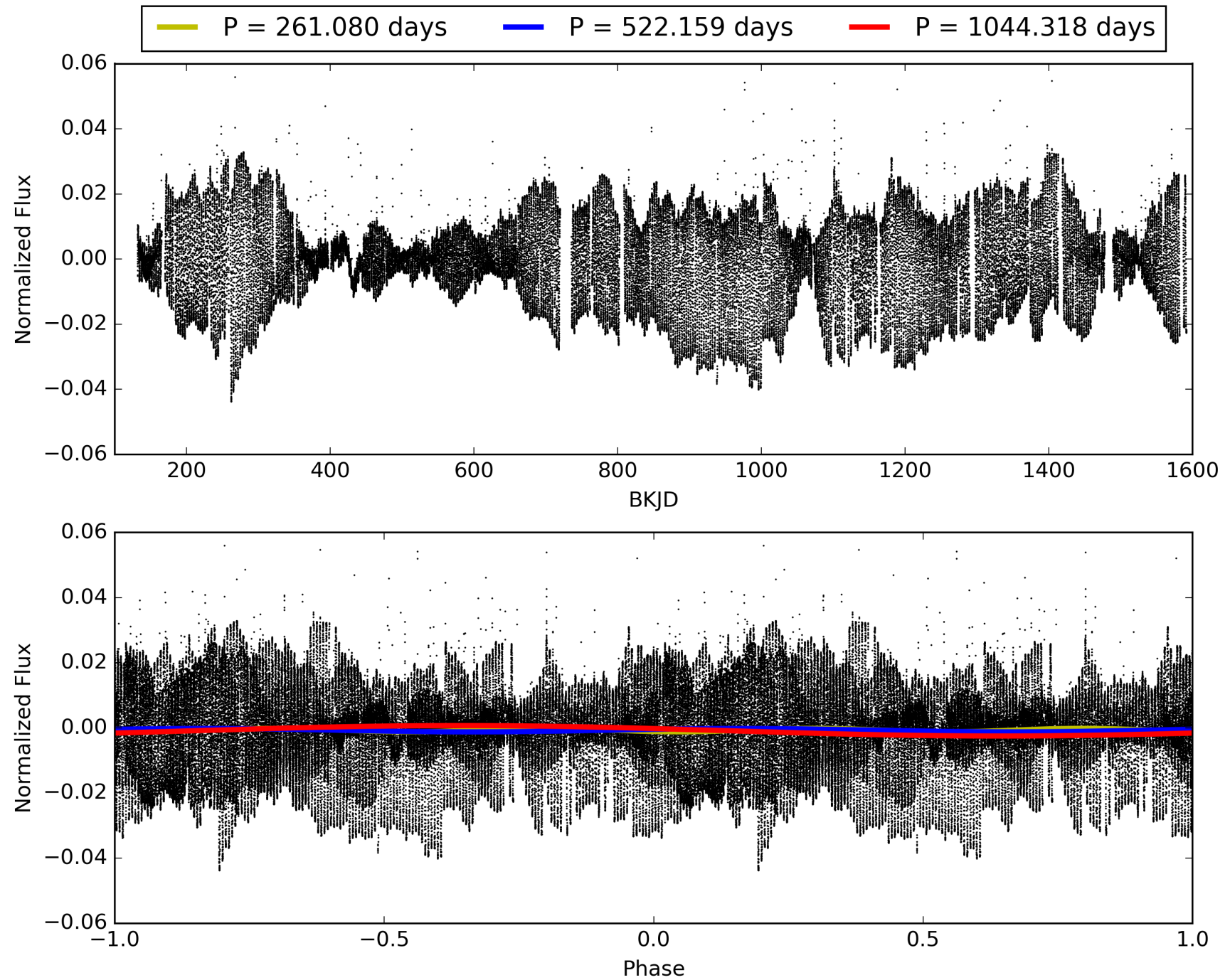
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 13:14:39 Z

This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009549091-03, PDC Light Curves

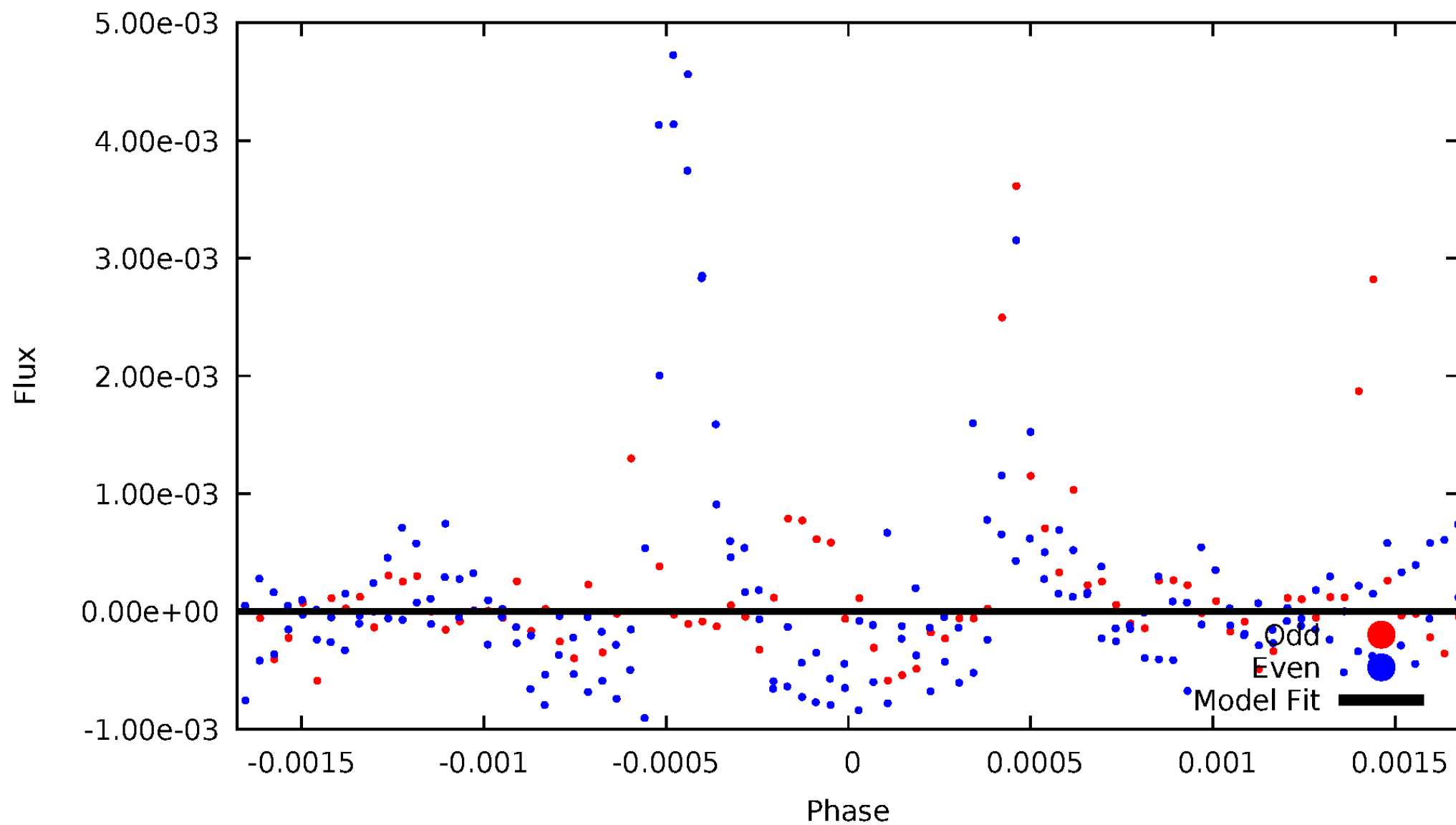


TCE 009549091-03



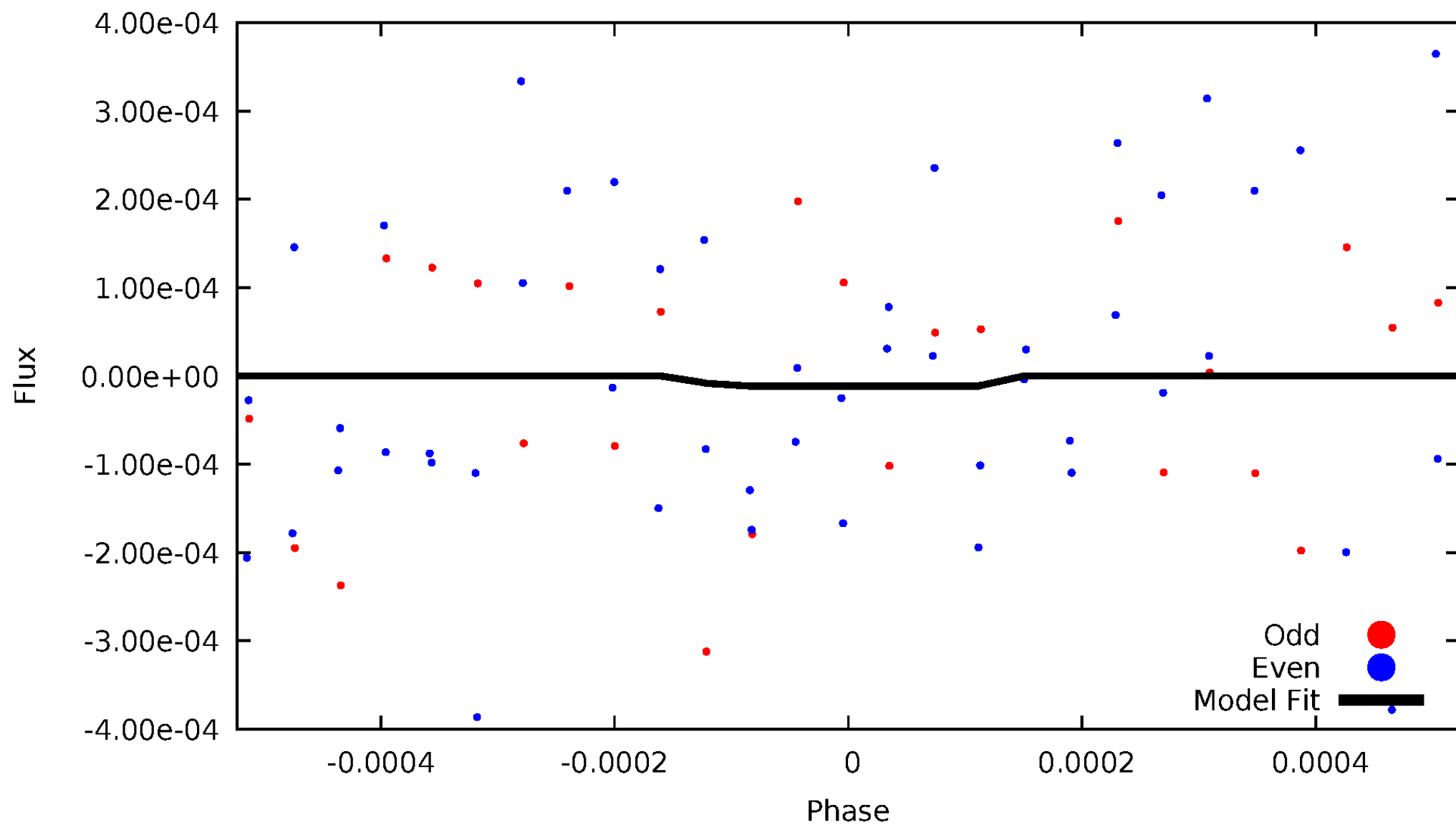
DV Odd/Even

TCE 009549091-03



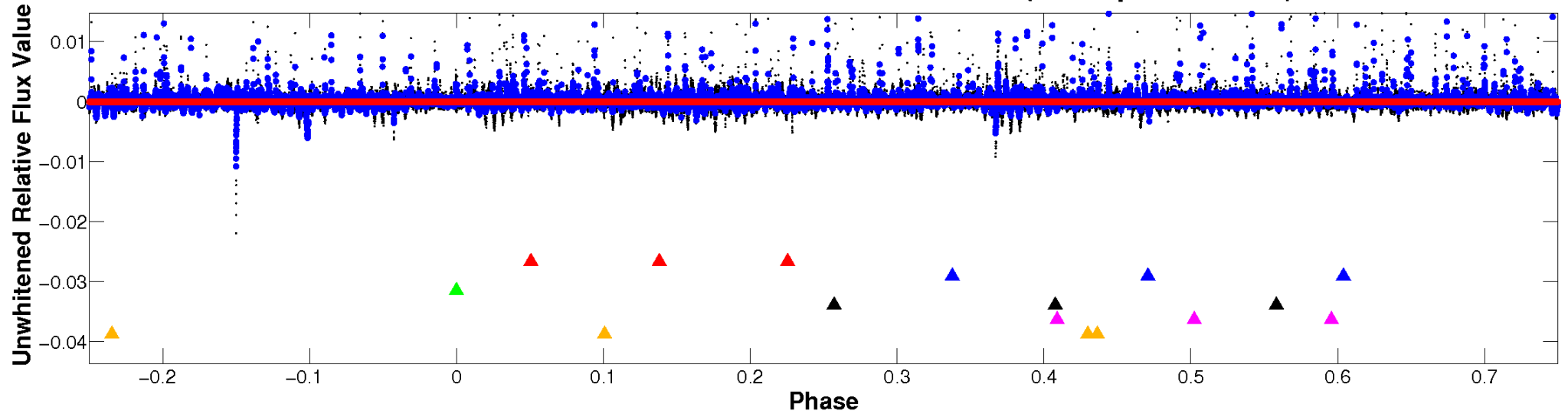
ALT Odd/Even

TCE 009549091-03



Non-Whitened Vs. Whitened Light Curve

Planet 3 : Phased Unwhitened Flux Time Series (TPS Epoch/Period)

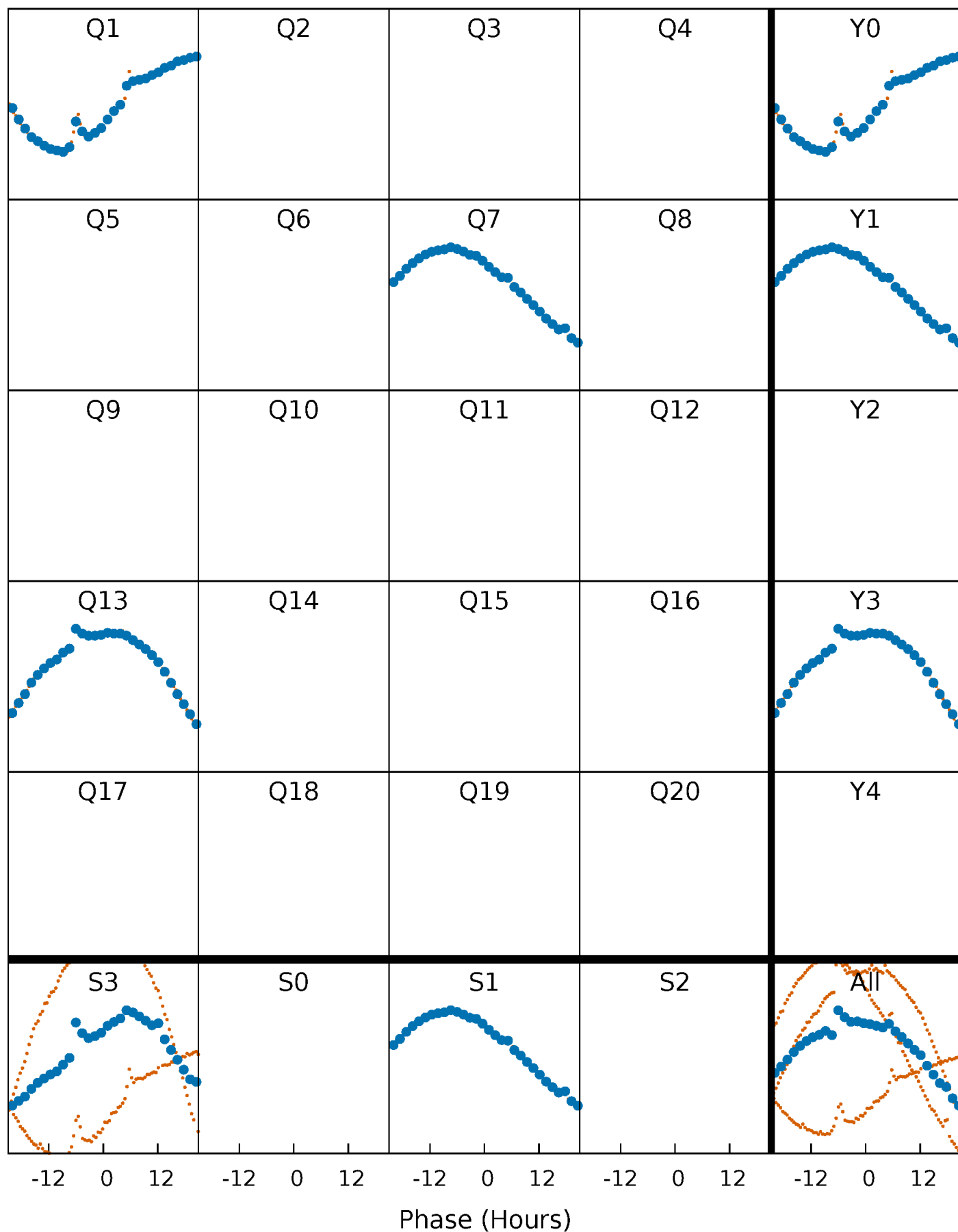


Planet 3 : Phased Whitened Flux Time Series (TPS Epoch/Period)



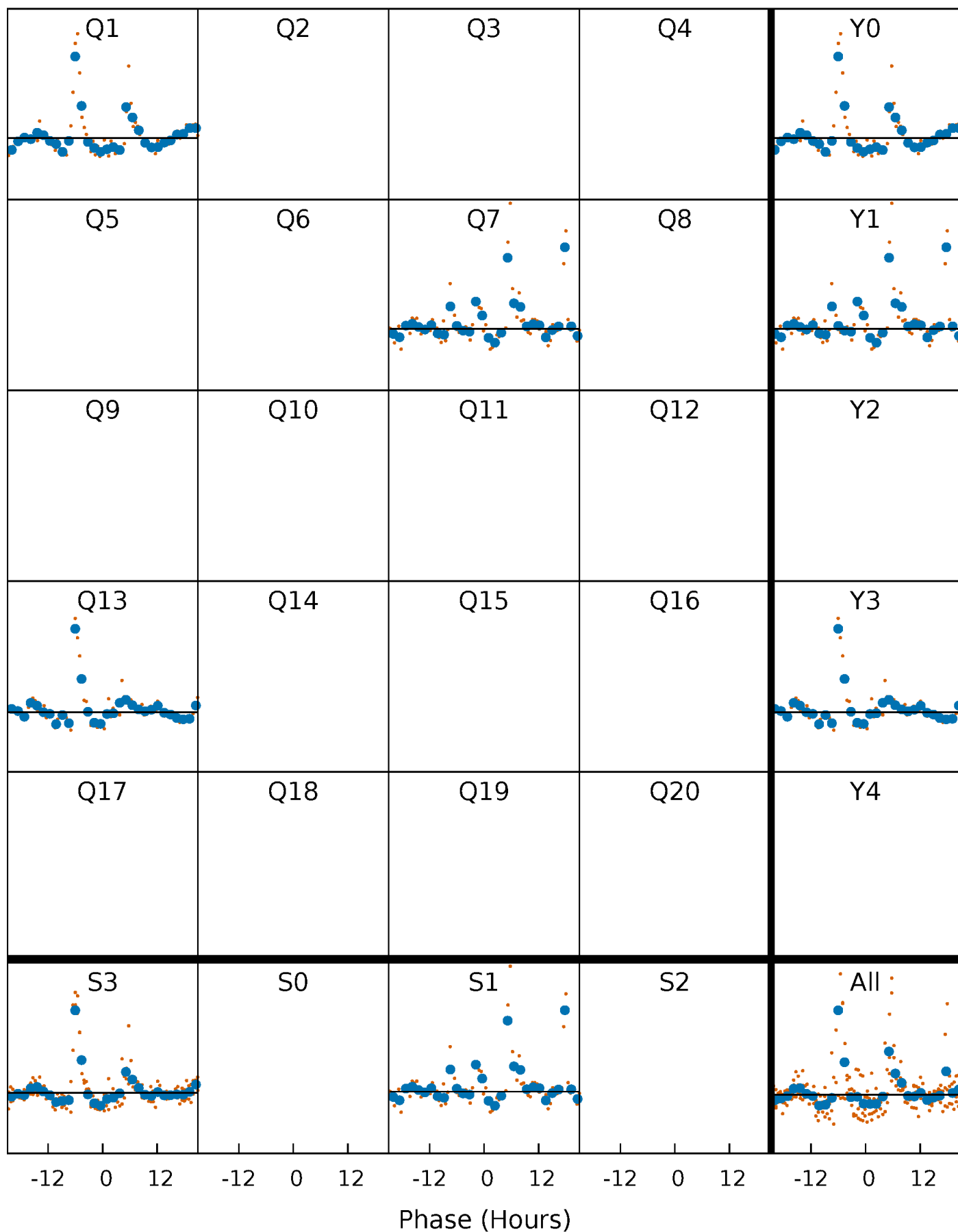
PDC Quarter-Phased Transit Curves

TCE 009549091-03 $P=522.159192$ Days $T_0=160.717362$ (BKJD)



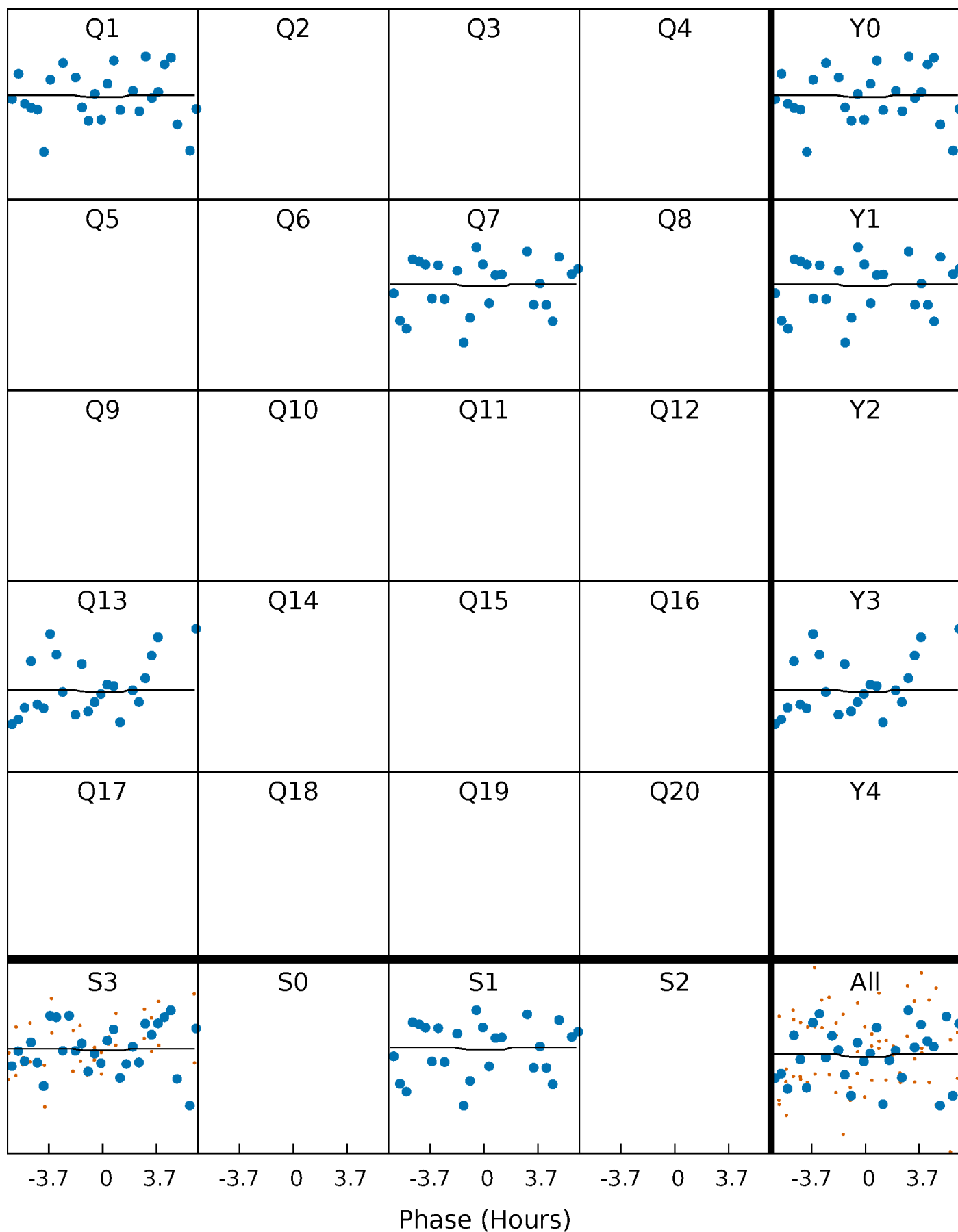
DV Quarter-Phased Transit Curves

TCE 009549091-03 $P=522.159192$ Days $T_0=160.717362$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

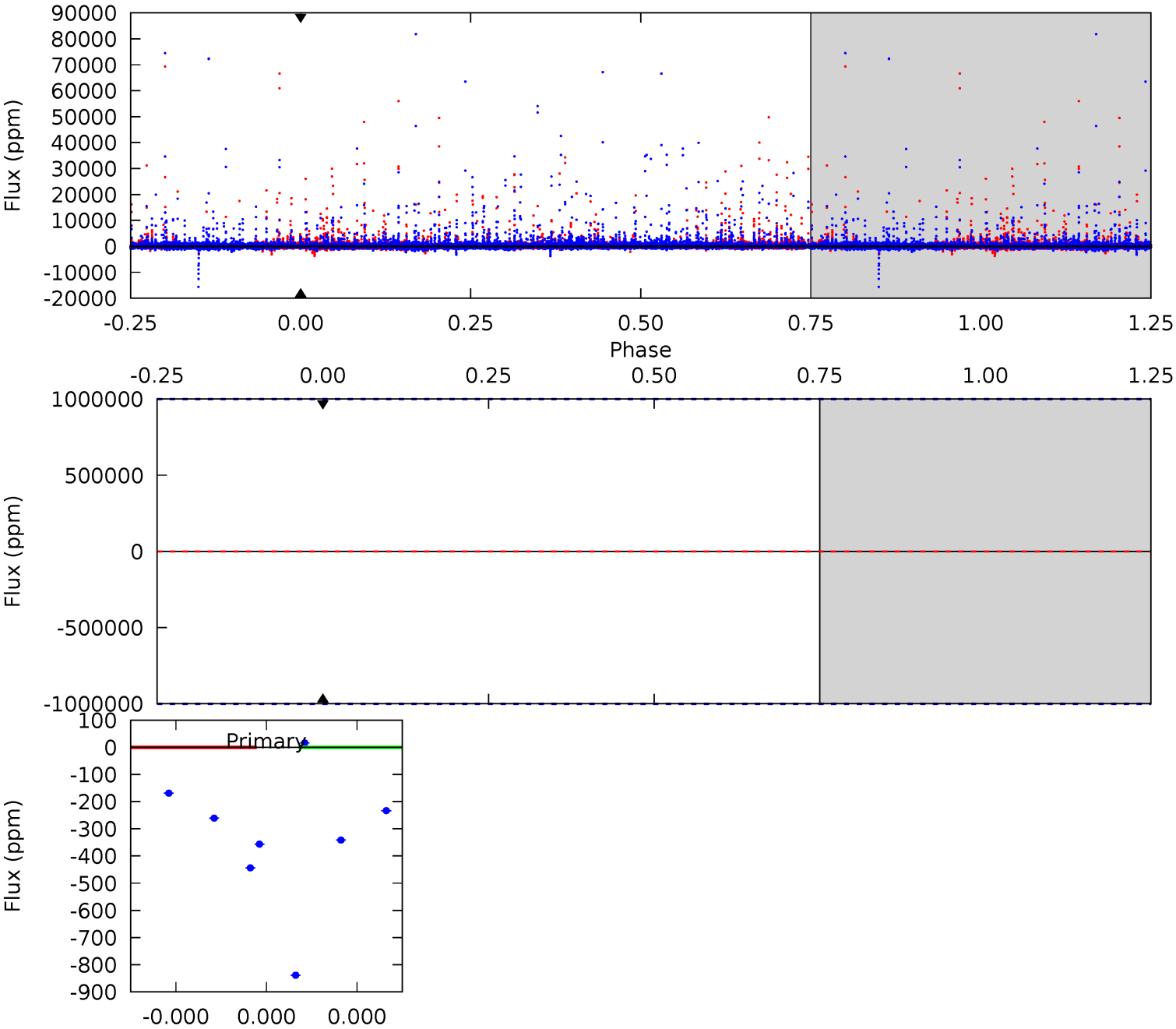
TCE 009549091-03 $P=522.159192$ Days $T_0=161.368725$ (BKJD)



DV Model-Shift Uniqueness Test

009549091-03, P = 522.159192 Days, E = 160.717362 Days

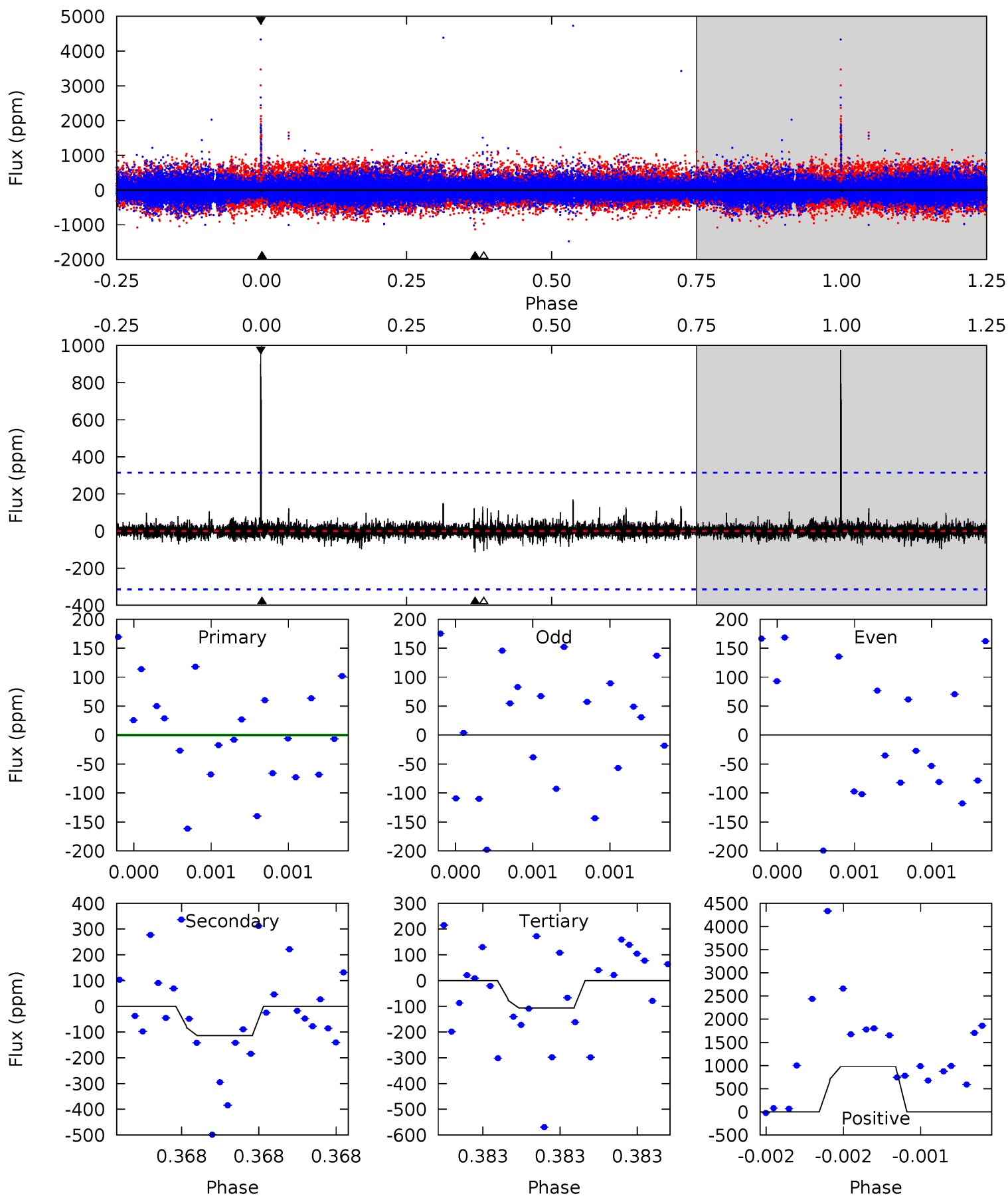
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

009549091-03, P = 522.159192 Days, E = 161.368725 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.51	2.06	1.92	17.6	5.68	3.64	0.53	-1.41	-17.1	0.13	-15.5	0.14	1.05	0.90	0.46



Stellar Parameters For KIC 009549091

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5110^{+153}_{-138}	$3.818^{+0.805}_{-0.345}$	$-0.280^{+0.300}_{-0.250}$	$1.900^{+1.387}_{-1.134}$	$0.867^{+0.254}_{-0.157}$	$0.178^{+2.804}_{-0.116}$
	+3%/-3%	+21%/-9%	+107%/-89%	+73%/-60%	+29%/-18%	+1576%/-65%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 009549091-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	0 ± 1000000	$14.02^{+16.72}_{-9.71}$	384^{+71}_{-71}	3901^{+12777}_{-18495}	$3845^{+791909}_{-696816}$
Alt.	-114 ± 55	$12.45^{+17.17}_{-8.91}$	384^{+65}_{-70}	2696^{+1225}_{-493}	493^{+6295}_{-415}

T_{max} = Theoretical Maximum Planetary Temperature

T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)

A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{obs} \gg T_{max}$ AND $A_{obs} \gg 1.0$

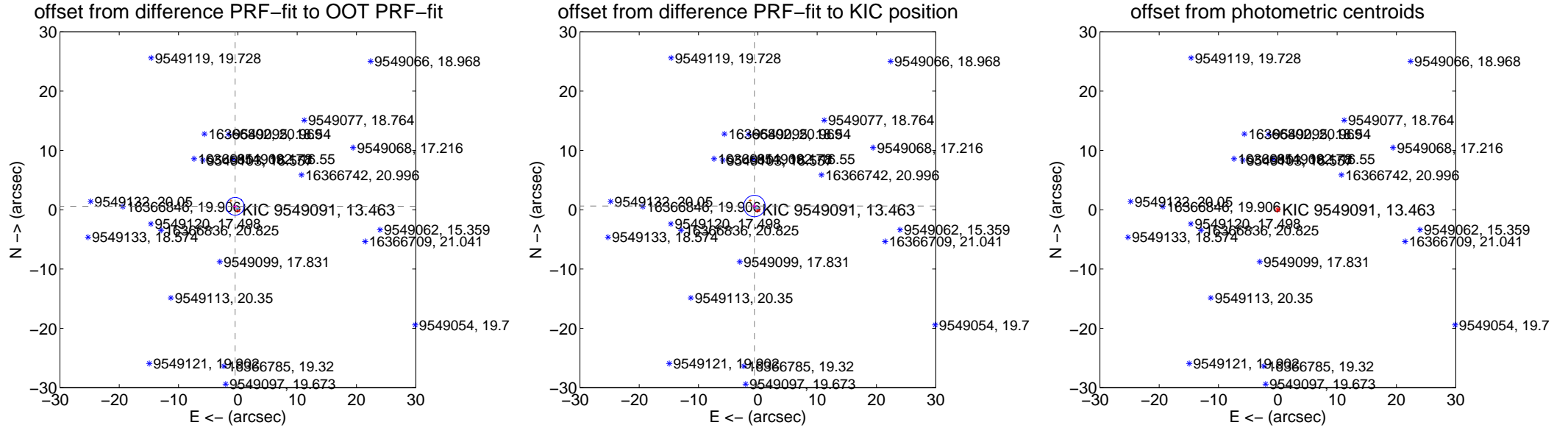
DV Centroid Data

Supplemental centroid analysis for 009549091-03. Kepler magnitude: 13.46. Transit SNR -1.00

There are 2 quarters with good PRF difference image offsets

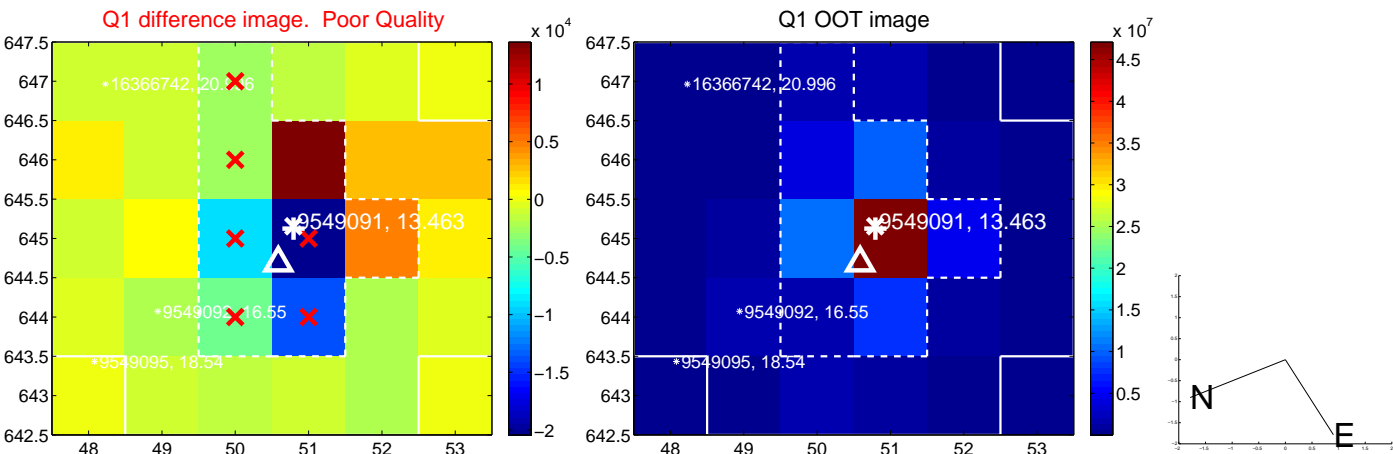
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.737 ± 0.501	1.47	0.460 ± 0.322	0.576 ± 0.392
PRF-fit source offset from KIC position	0.845 ± 0.603	1.40	0.573 ± 0.380	0.620 ± 0.476
photometric centroid source offset	70.90 ± 64.54	1.10	54.39 ± 63.70	45.49 ± 65.73

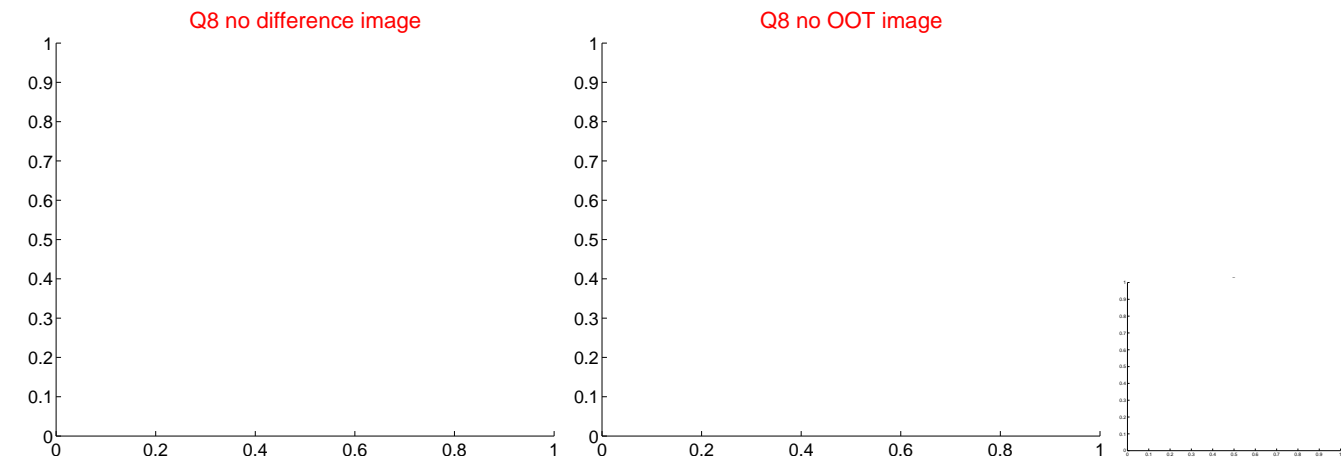
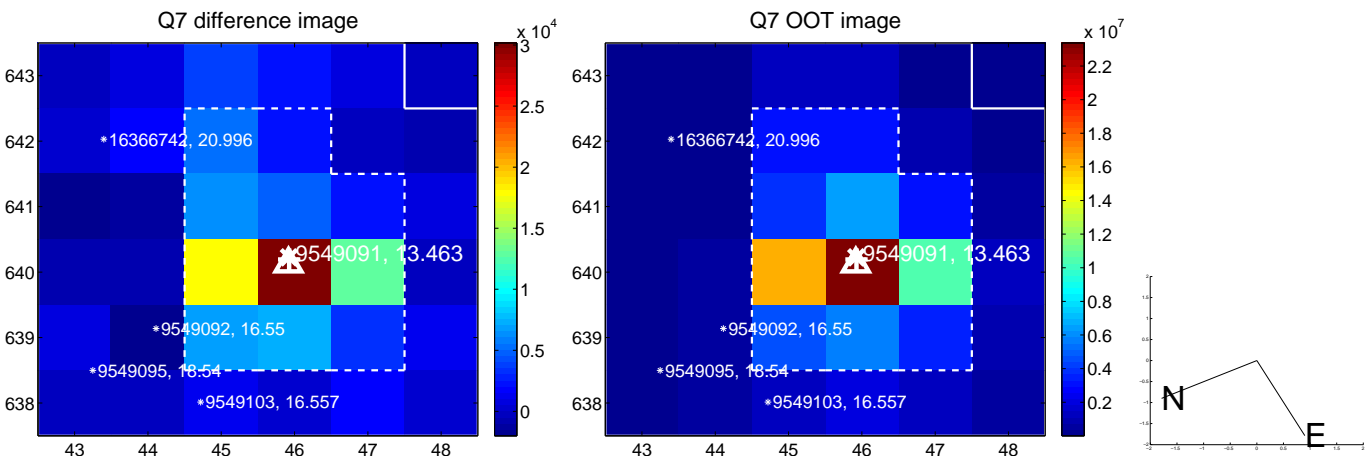


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000 are from the UKIRT catalog.

white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



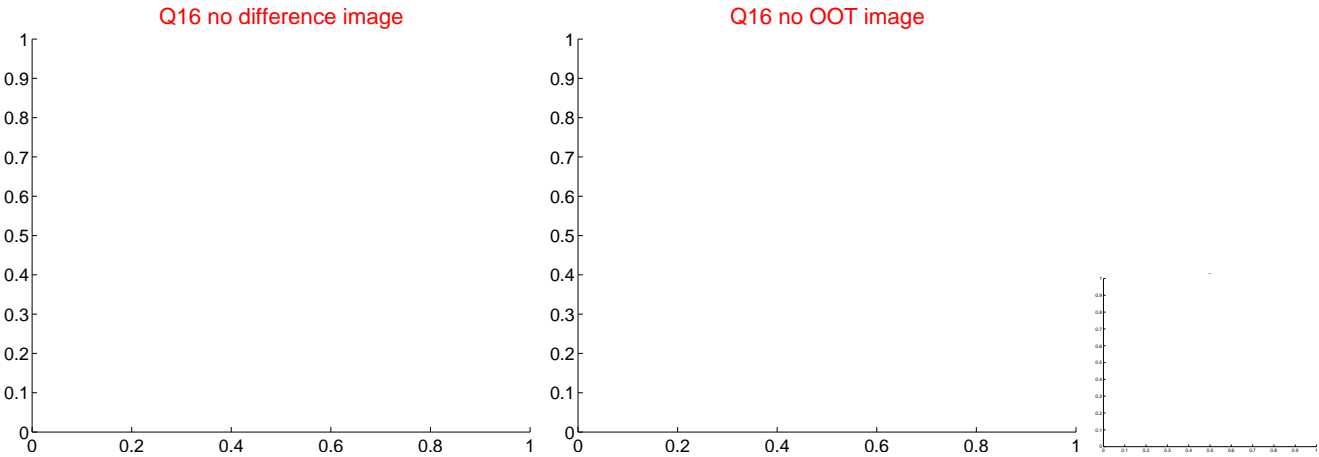
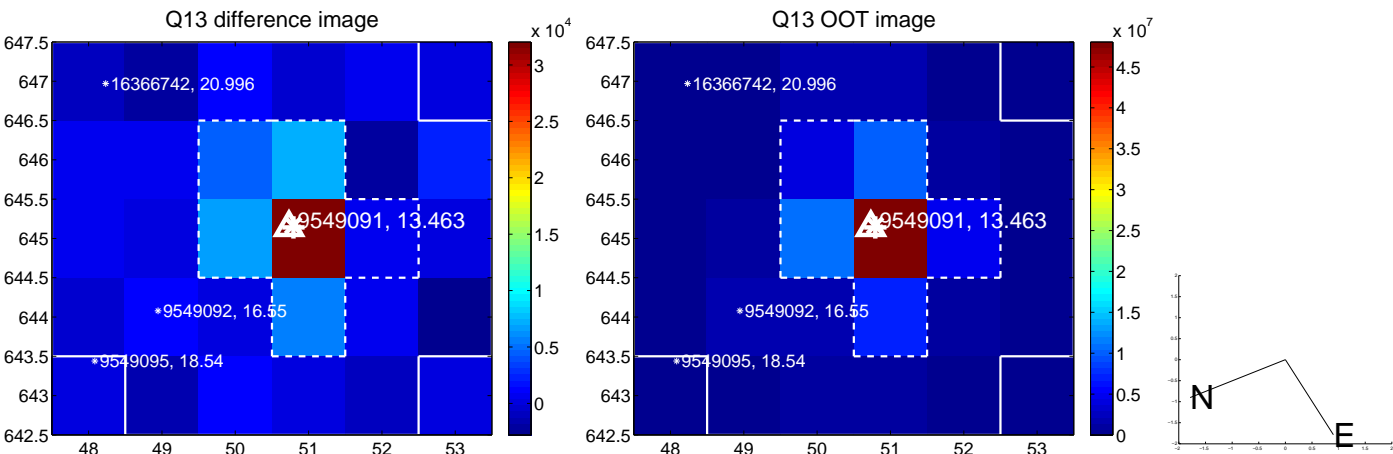
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



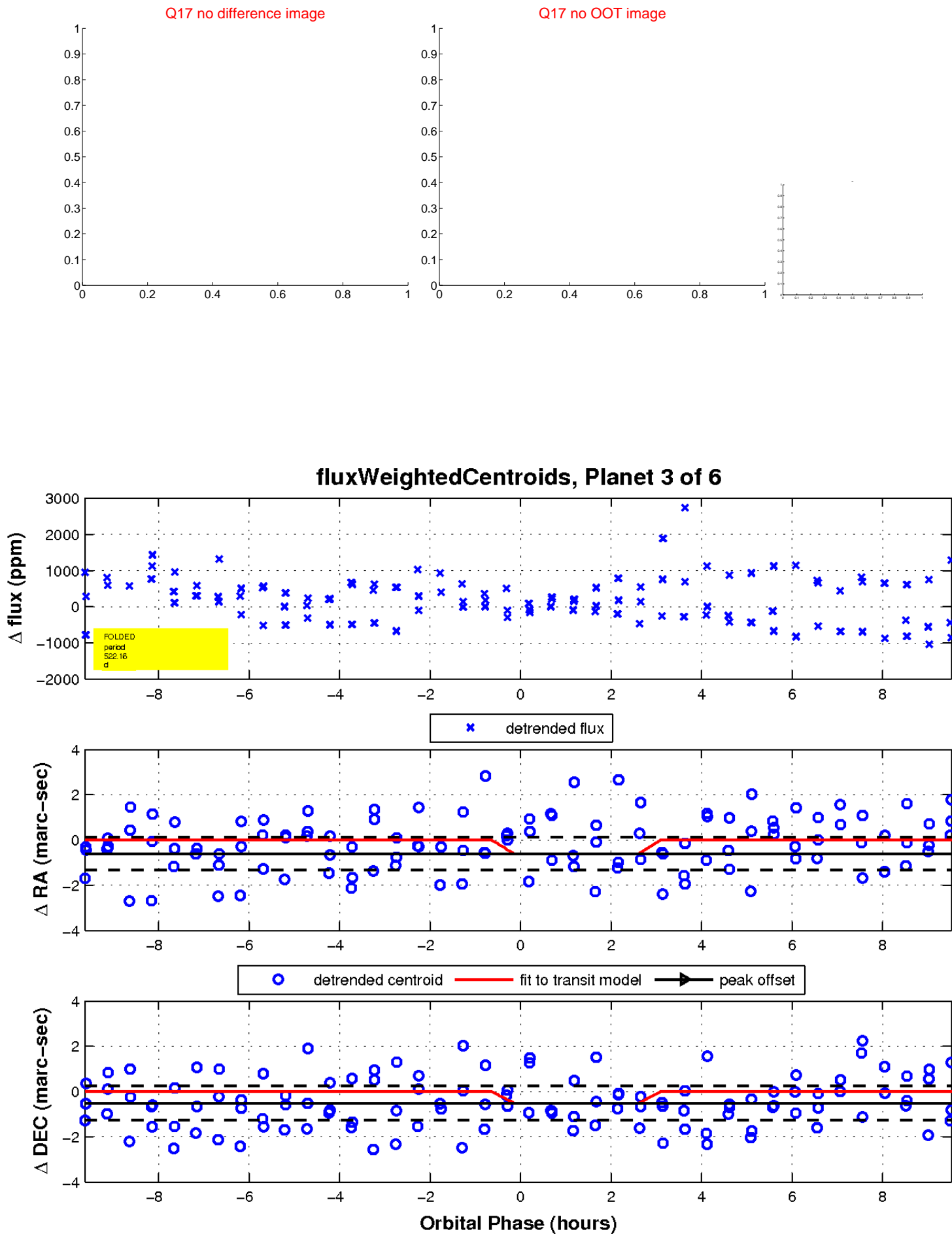
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

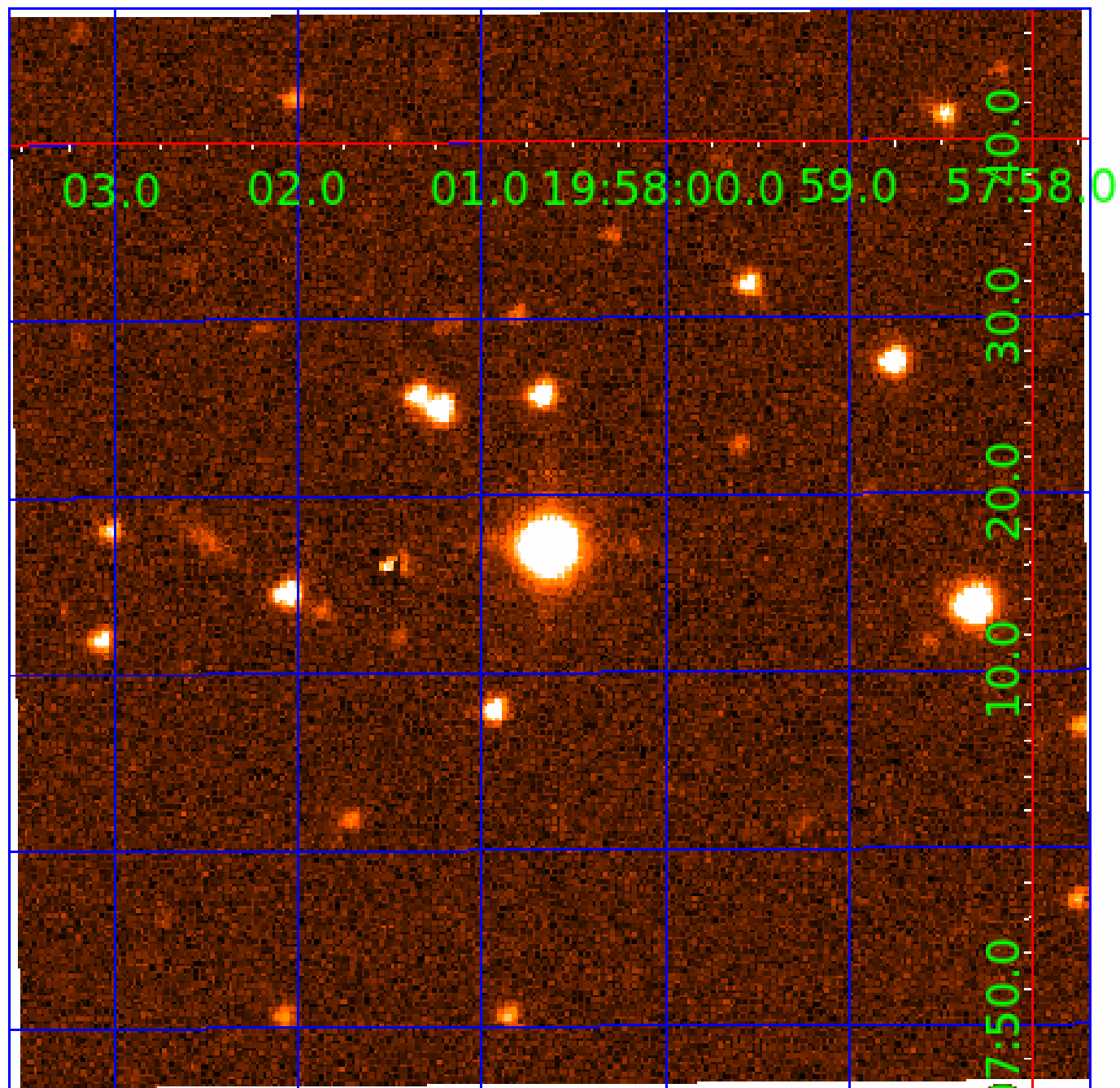


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009549091

Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R_{\star} (R_{\odot})	T_{\star} (K)	R_p (R_{\oplus})	S_p (S_{\oplus})
009549091-01	OBS	No	567.800060	187.196022	1602.2	13.326	11.6	5.6	1.90	5110	7.44	1.35
009549091-02	OBS	No	591.689902	337.016250	1784.1	15.282	17.8	8.0	1.90	5110	7.82	1.27
009549091-03	OBS	No	522.159192	160.717362	571.2	10.500	15.2	-1.0	1.90	5110	4.43	1.51
009549091-04	OBS	No	443.544138	452.231287	1137.8	6.093	15.1	7.0	1.90	5110	7.77	1.87
009549091-05	OBS	No	570.902531	374.292991	841.0	7.949	13.3	5.0	1.90	5110	5.84	1.34
009549091-06	OBS	No	346.974738	388.573649	1024.0	6.470	12.9	6.3	1.90	5110	12.19	2.60

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009549091-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009549091-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
009549091-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
009549091-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009549091-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009549091-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_FEW_DIFFS

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

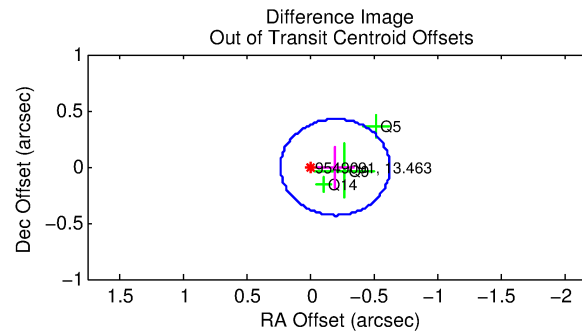
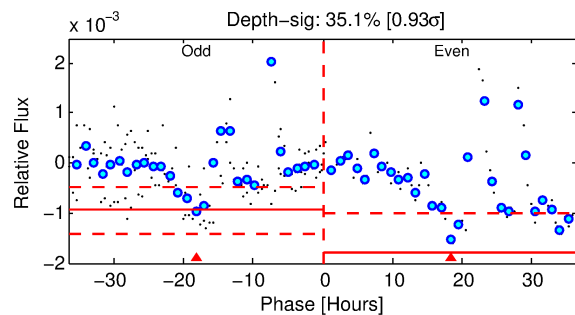
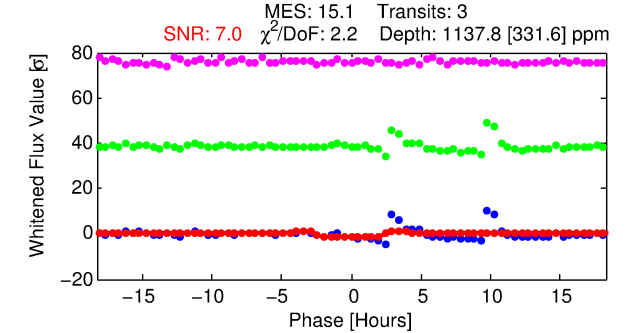
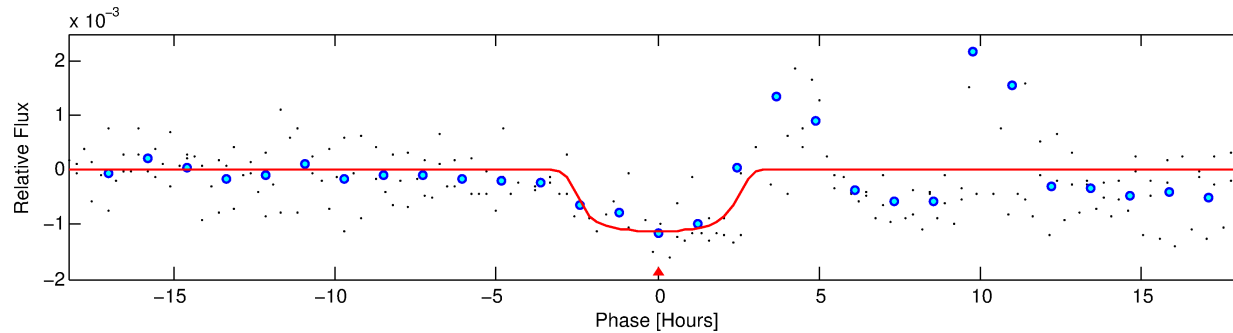
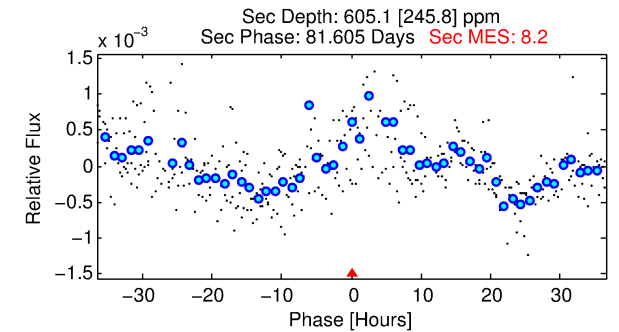
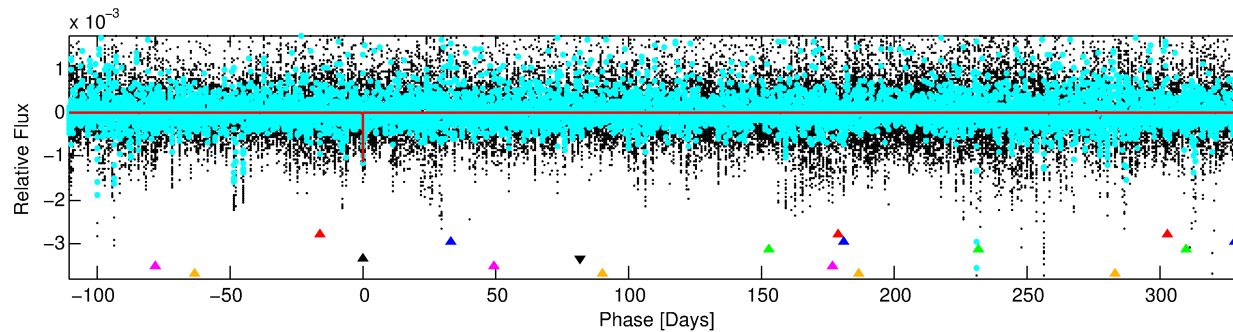
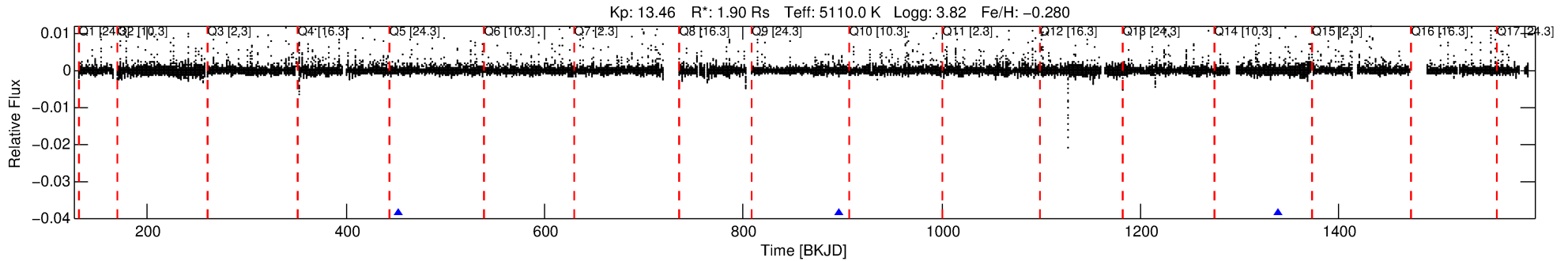
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009549091-04

No Significant Match Found

DV One-Page Summary

KIC: 9549091 Candidate: 4 of 6 Period: 443.544 d



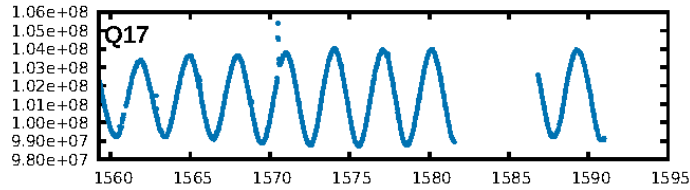
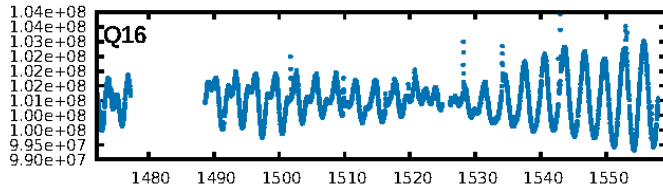
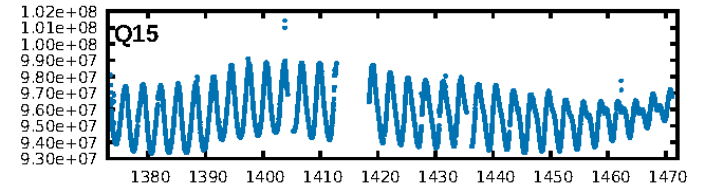
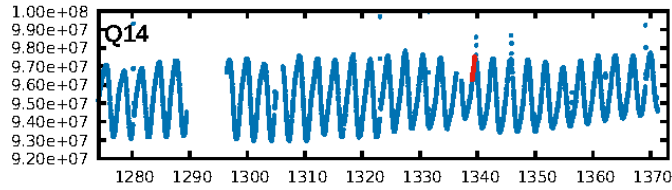
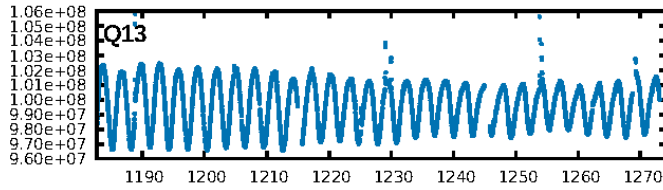
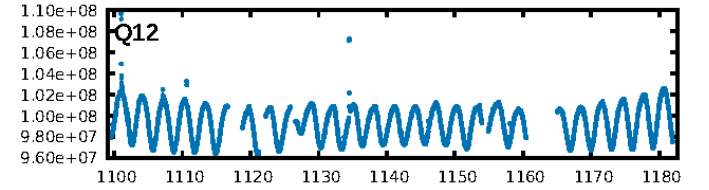
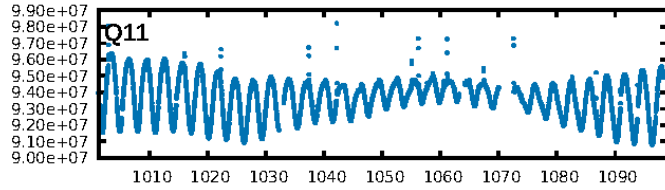
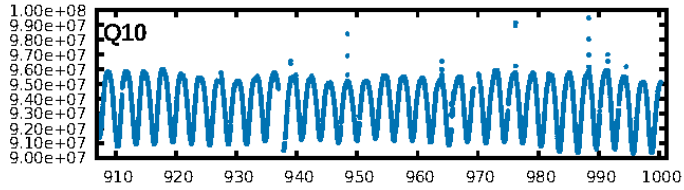
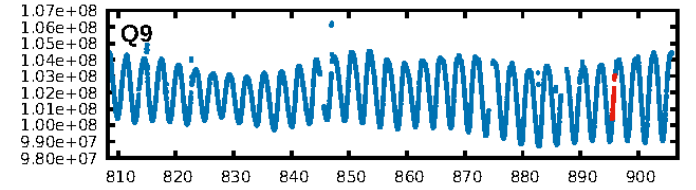
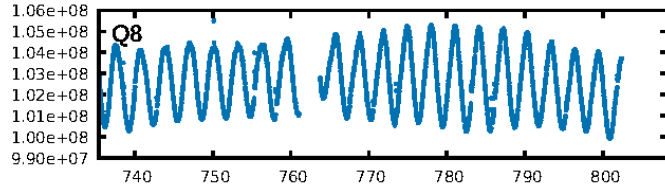
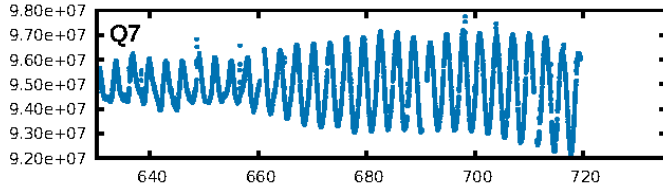
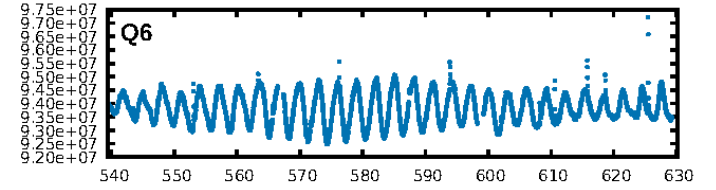
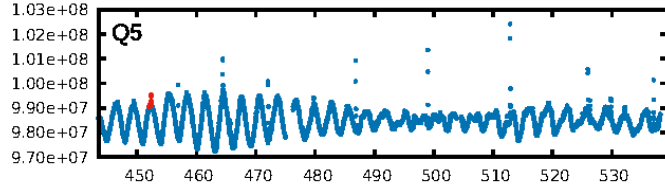
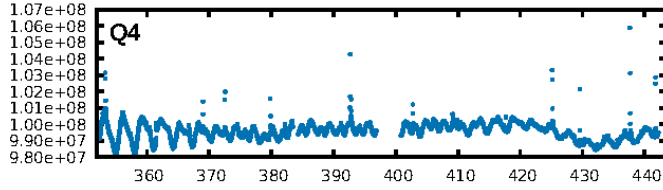
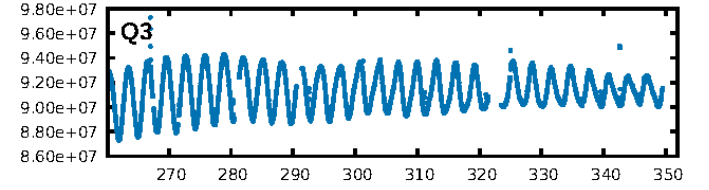
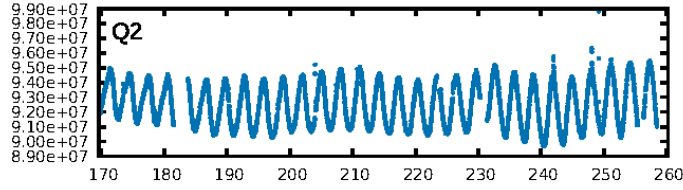
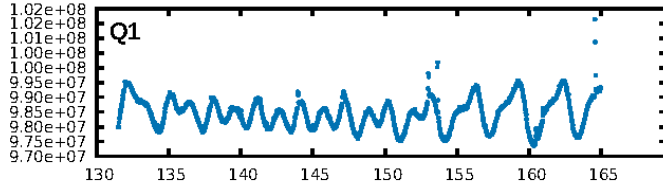
DV Fit Results:

Period = 443.54414 [0.01332] d
Epoch = 452.2313 [0.0133] BKJD
Rp/R* = 0.0375 [0.0078]
a/R* = 285.44 [138.97]
b = 0.90 [0.10]
Seff = 1.87 [2.50]
Teff = 298 [99] K
Rp = 7.77 [5.90] Re
a = 1.0852 [0.8535] AU
Ag = 6498.85 [9423.65] [0.69σ]
Teffp = 4141 [615] K [6.17σ]

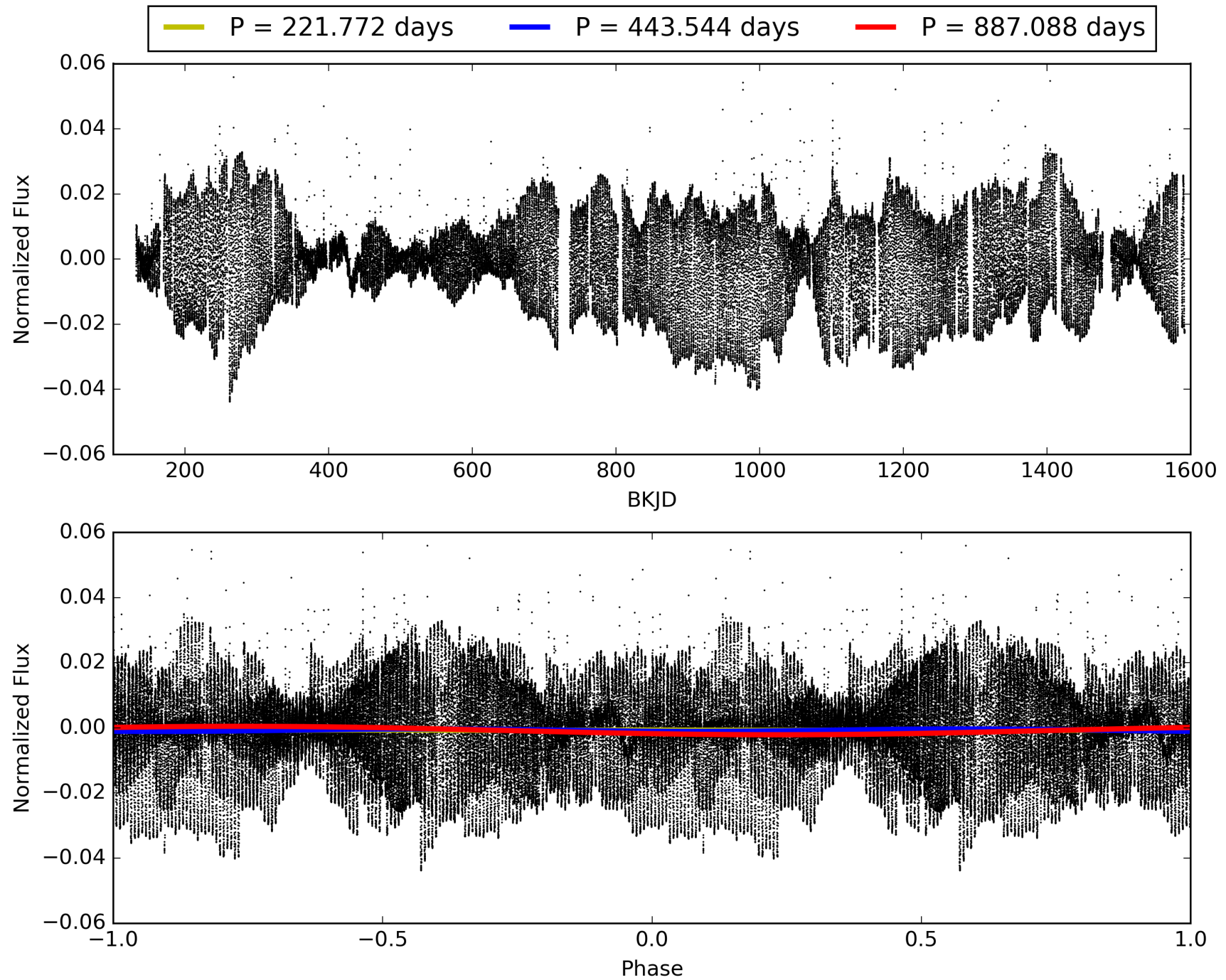
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [260.78σ]
LongPeriod-sig: 100.0% [155.42σ]
ModelChiSquare2-sig: 64.1%
ModelChiSquareGof-sig: 87.8%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 2.668
Centroid-sig: 31.4%
Centroid-so: 0.547 arcsec [0.81σ]
OotOffset-rm: 0.200 arcsec [1.40σ]
OotOffset-st: 1/0/0/2 [3]
KicOffset-rm: 0.230 arcsec [1.84σ]
KicOffset-st: 1/0/0/2 [3]
DiffImageQuality-fgm: 0.00 [0/3]
DiffImageOverlap-fno: 1.00 [3/3]

TCE 009549091-04, PDC Light Curves

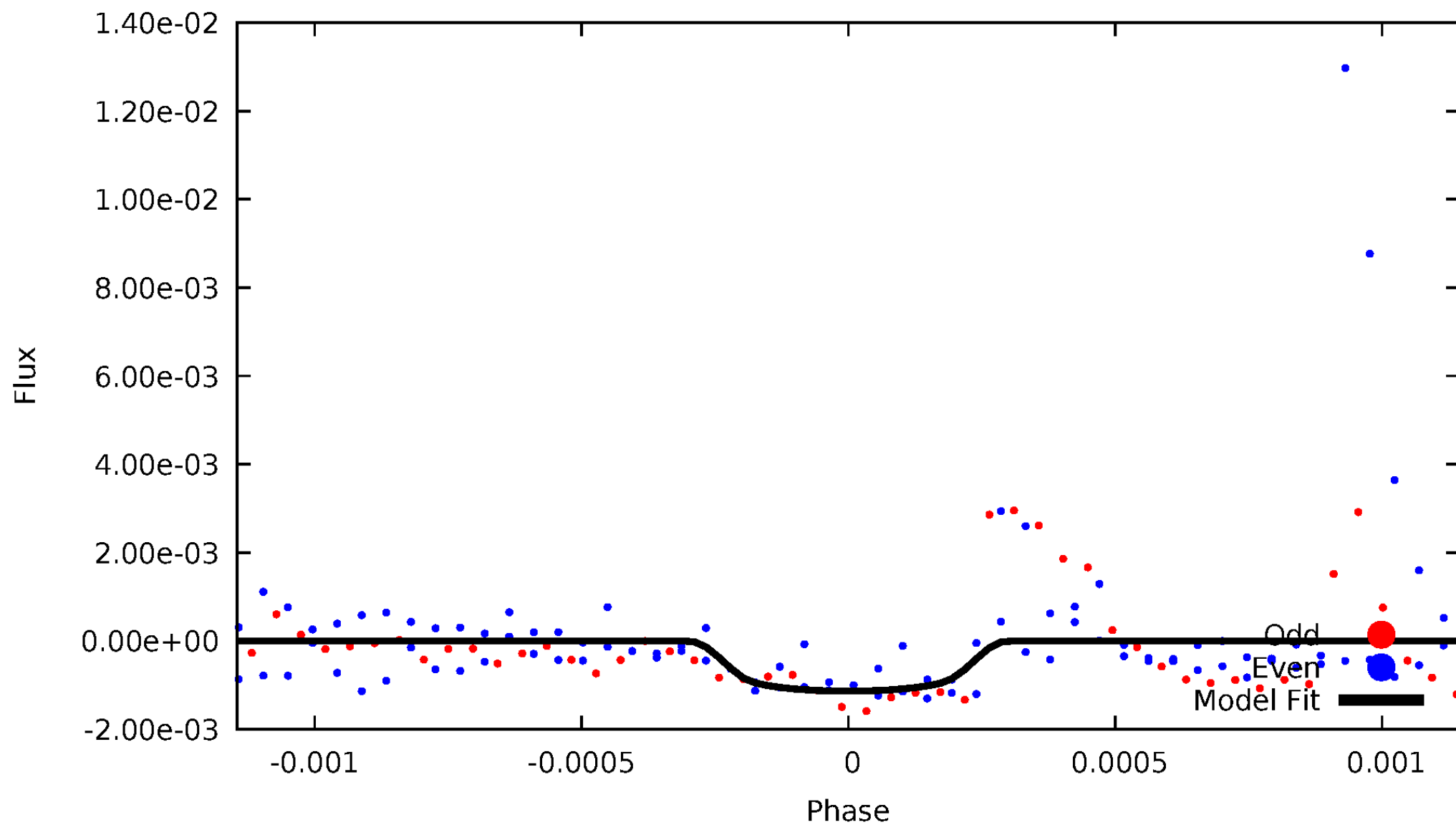


TCE 009549091-04



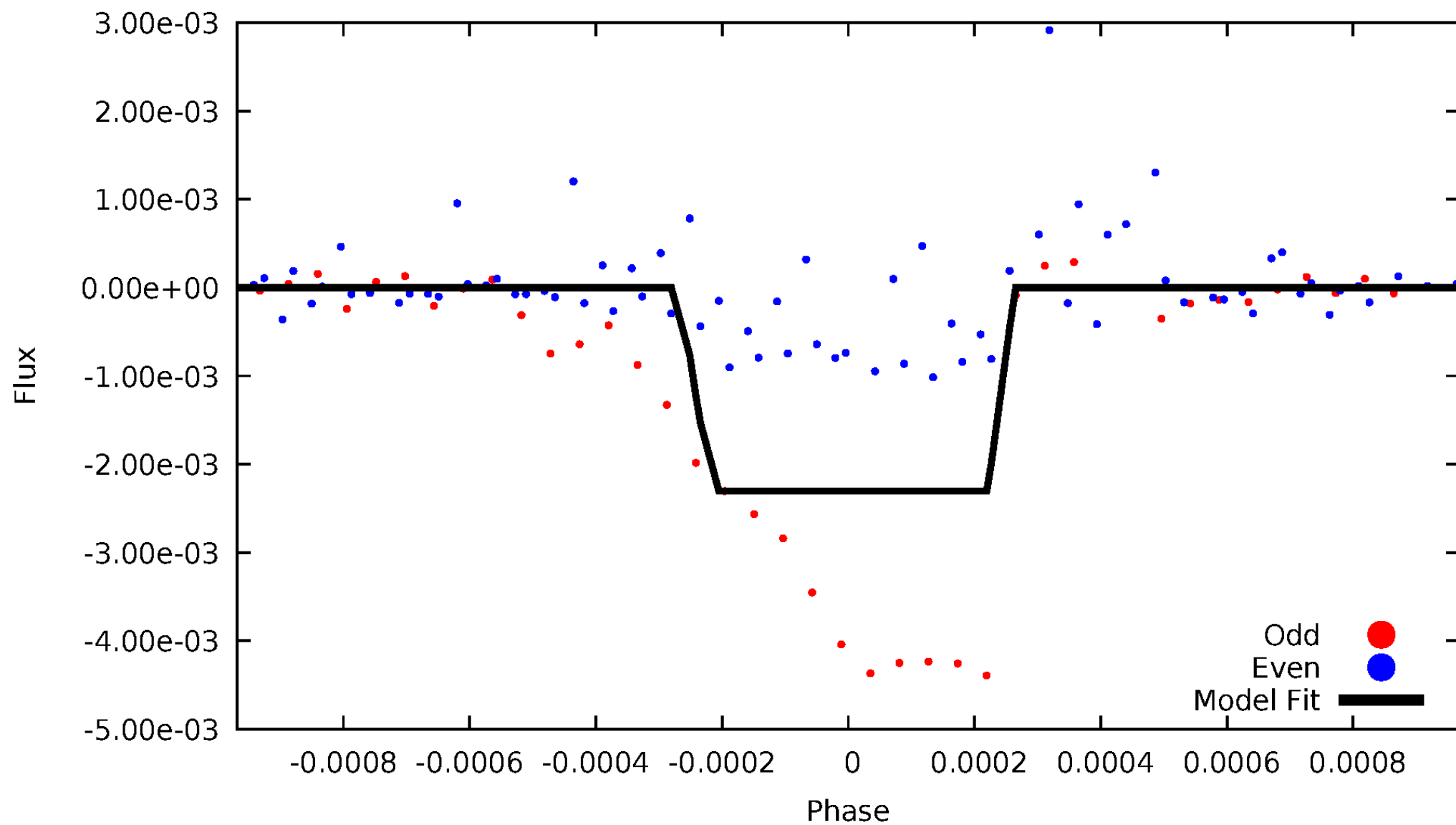
DV Odd/Even

TCE 009549091-04



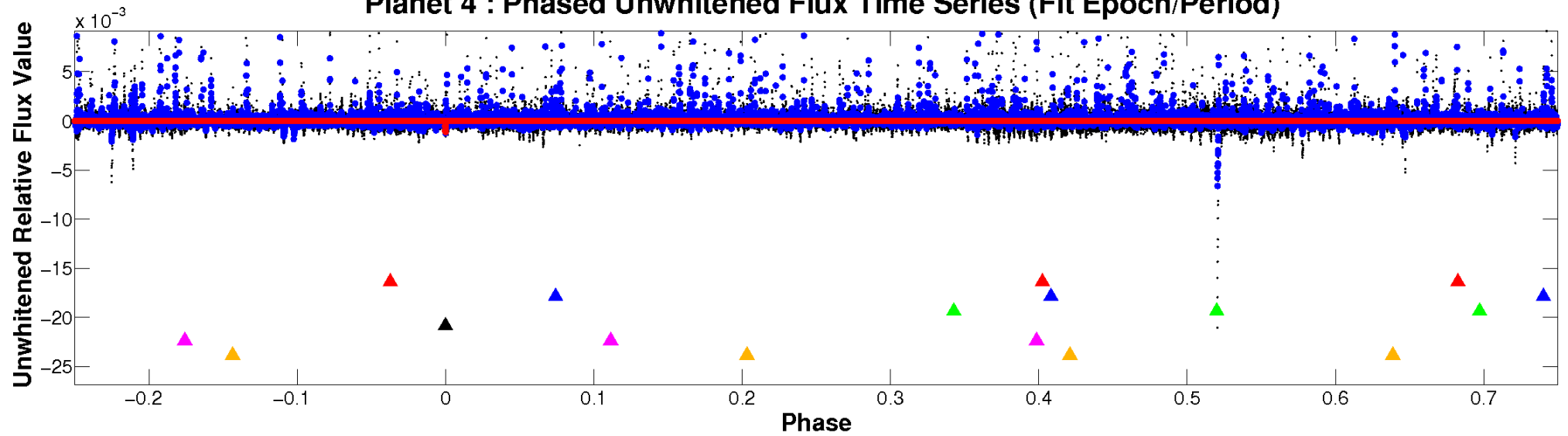
ALT Odd/Even

TCE 009549091-04

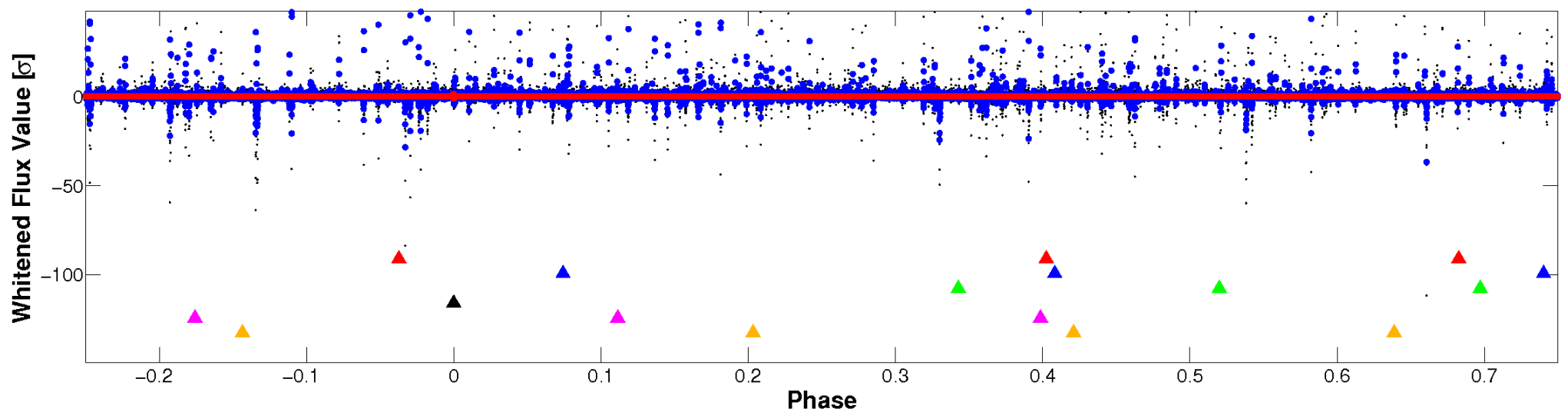


Non-Whitened Vs. Whitened Light Curve

Planet 4 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

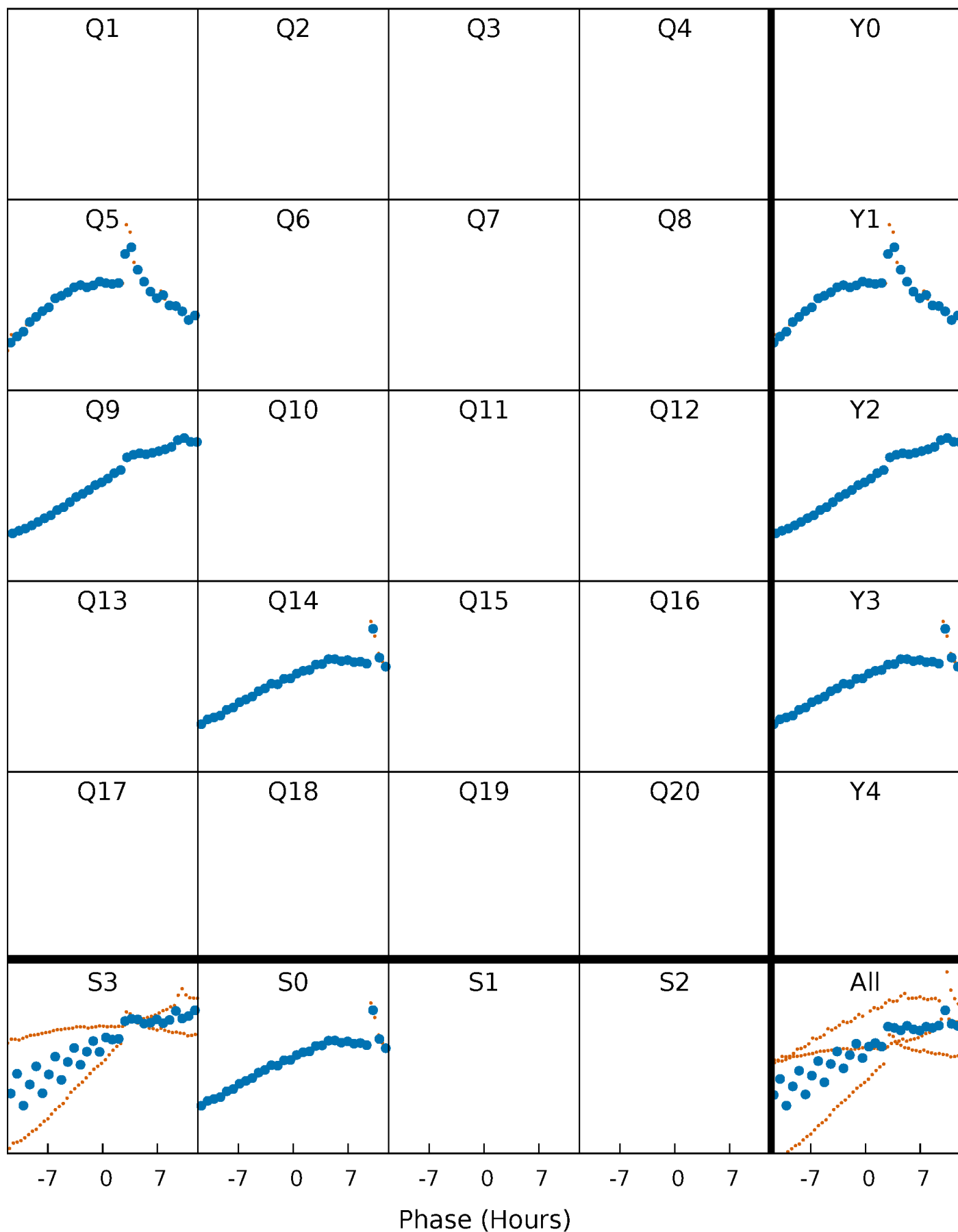


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



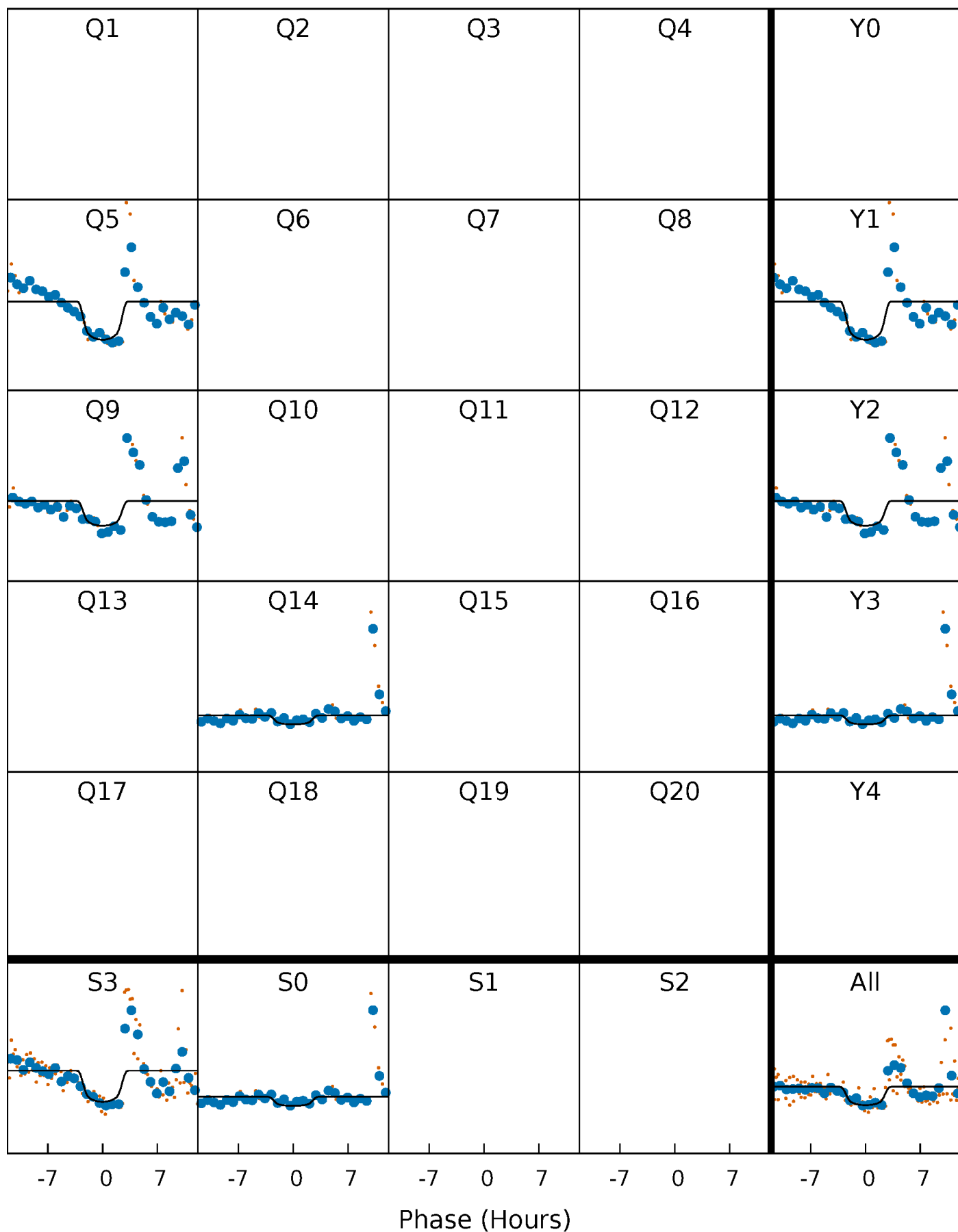
PDC Quarter-Phased Transit Curves

TCE 009549091-04 $P=443.544138$ Days $T_0=452.231287$ (BKJD)



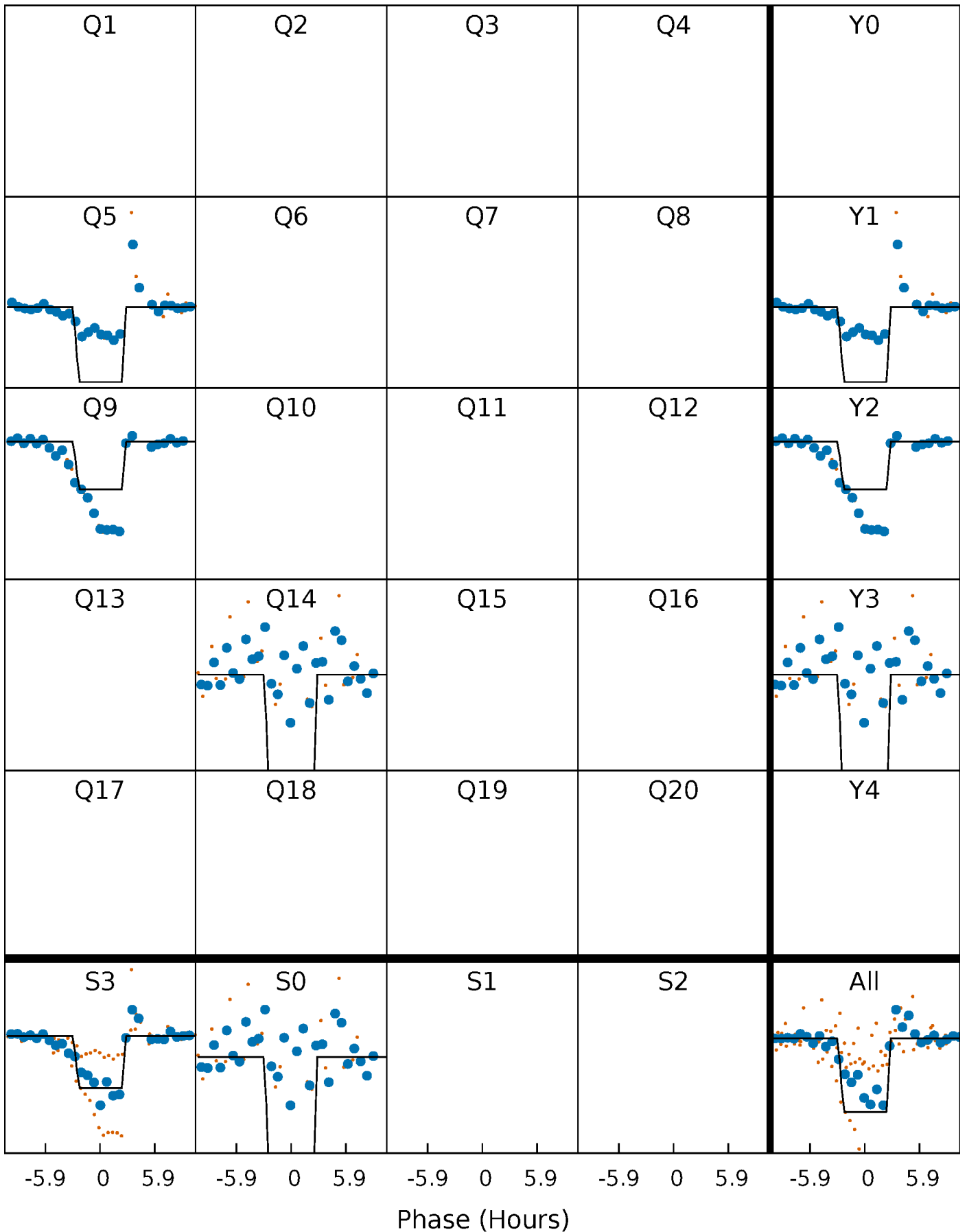
DV Quarter-Phased Transit Curves

TCE 009549091-04 $P=443.544138$ Days $T_0=452.231287$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

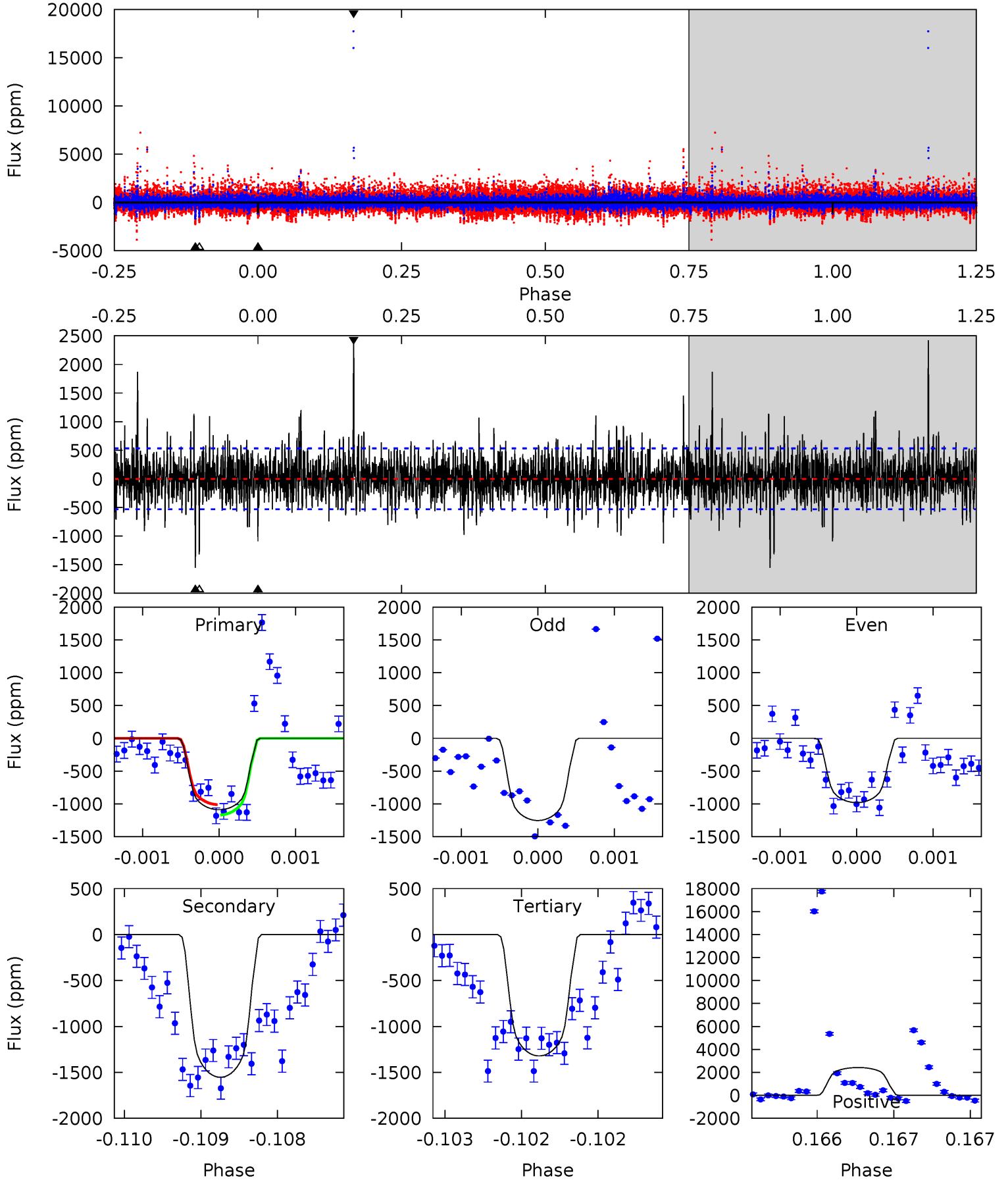
TCE 009549091-04 P=443.537665 Days $T_0=452.237336$ (BKJD)



DV Model-Shift Uniqueness Test

009549091-04, P = 443.544138 Days, E = 8.687149 Days

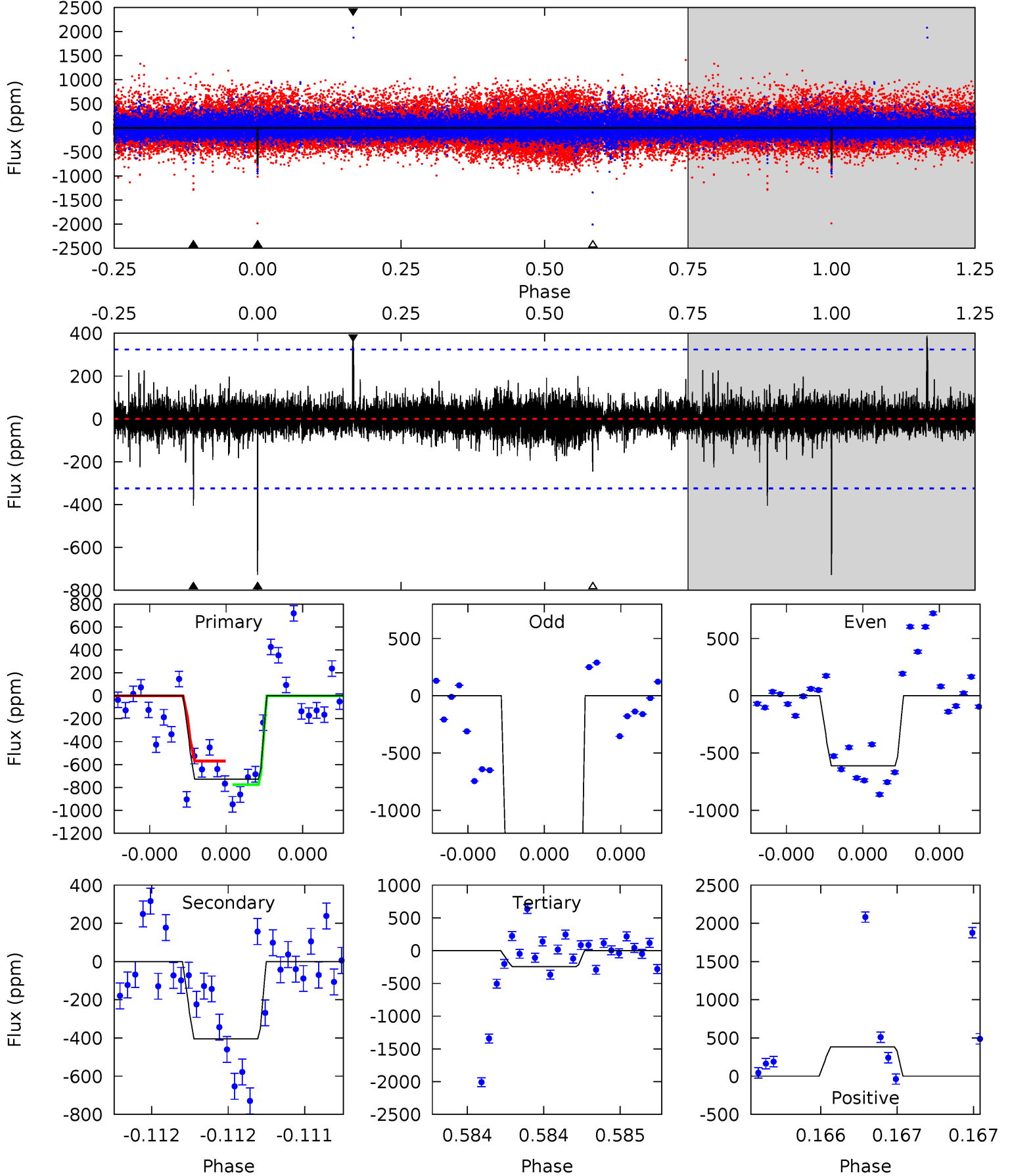
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.4	16.2	13.8	25.3	5.55	3.44	2.90	-2.41	-13.9	2.43	-9.06	0.86	0.87	0.61	0.83



Alt Model-Shift Uniqueness Test

009549091-04, P = 443.537665 Days, E = 8.699671 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.5	6.95	4.22	6.58	5.57	3.48	0.73	8.28	5.92	2.73	0.37	30.2	1.86	0.34	1.75



Stellar Parameters For KIC 009549091

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5110^{+153}_{-138}	$3.818^{+0.805}_{-0.345}$	$-0.280^{+0.300}_{-0.250}$	$1.900^{+1.387}_{-1.134}$	$0.867^{+0.254}_{-0.157}$	$0.178^{+2.804}_{-0.116}$
	+3%/-3%	+21%/-9%	+107%/-89%	+73%/-60%	+29%/-18%	+1576%/-65%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 009549091-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1553 ± 96	$7.26^{+3.67}_{-2.72}$	405^{+70}_{-73}	5239^{+659}_{-461}	19132^{+31087}_{-10426}
Alt.	-405 ± 58	$9.46^{+4.44}_{-3.43}$	409^{+77}_{-79}	3684^{+256}_{-216}	2992^{+3879}_{-1635}

T_{max} = Theoretical Maximum Planetary Temperature

T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)

A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{\text{obs}} \gg T_{\text{max}}$ AND $A_{\text{obs}} \gg 1.0$

DV Centroid Data

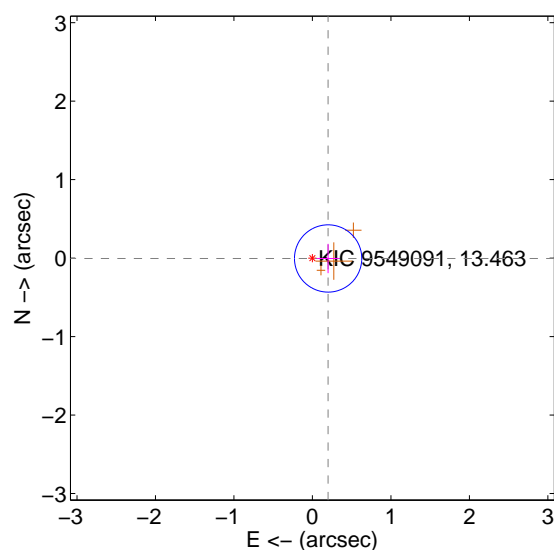
Supplemental centroid analysis for 009549091-04. Kepler magnitude: 13.46. Transit SNR 6.99

There are 0 quarters with good PRF difference image offsets

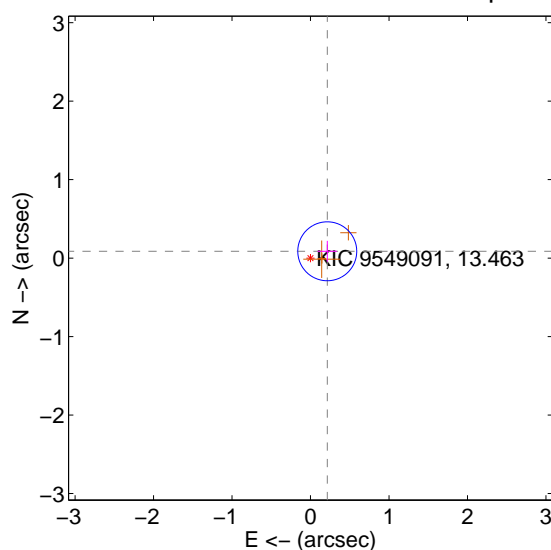
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.200 ± 0.143	1.40	-0.200 ± 0.143	-0.005 ± 0.187
PRF-fit source offset from KIC position	0.230 ± 0.125	1.84	-0.213 ± 0.124	0.087 ± 0.132
photometric centroid source offset	0.55 ± 0.67	0.81	-0.06 ± 0.61	0.54 ± 0.67

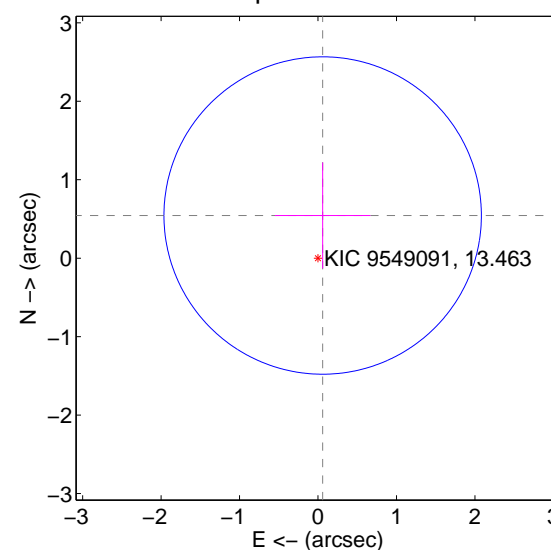
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

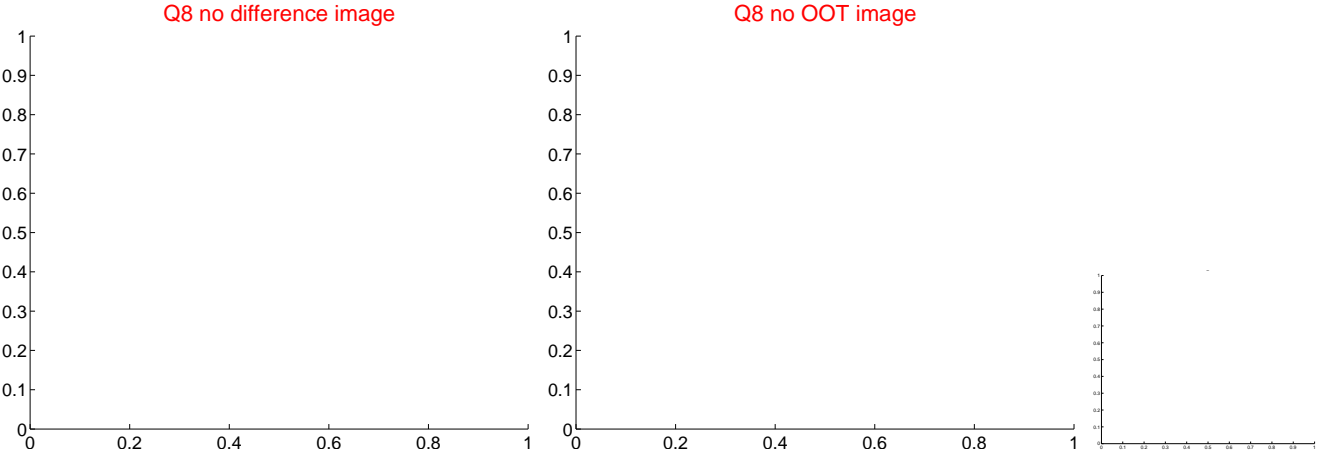
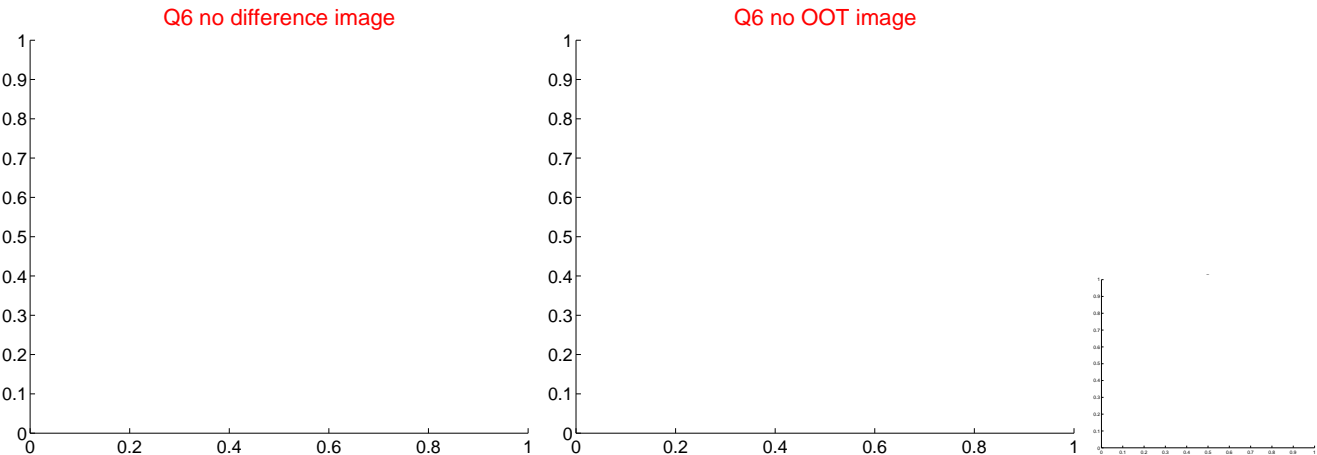
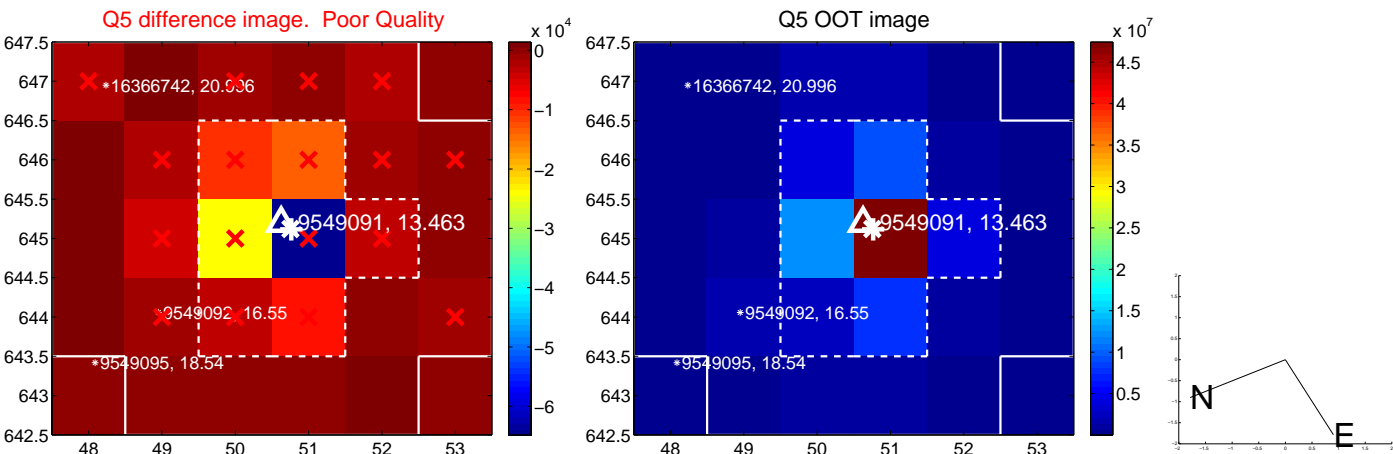


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

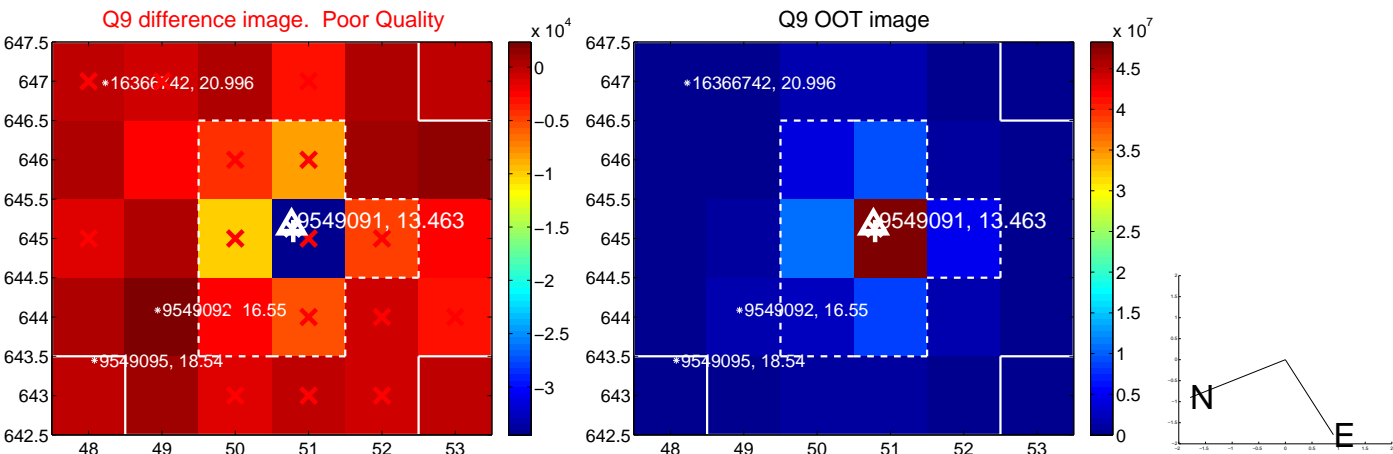
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



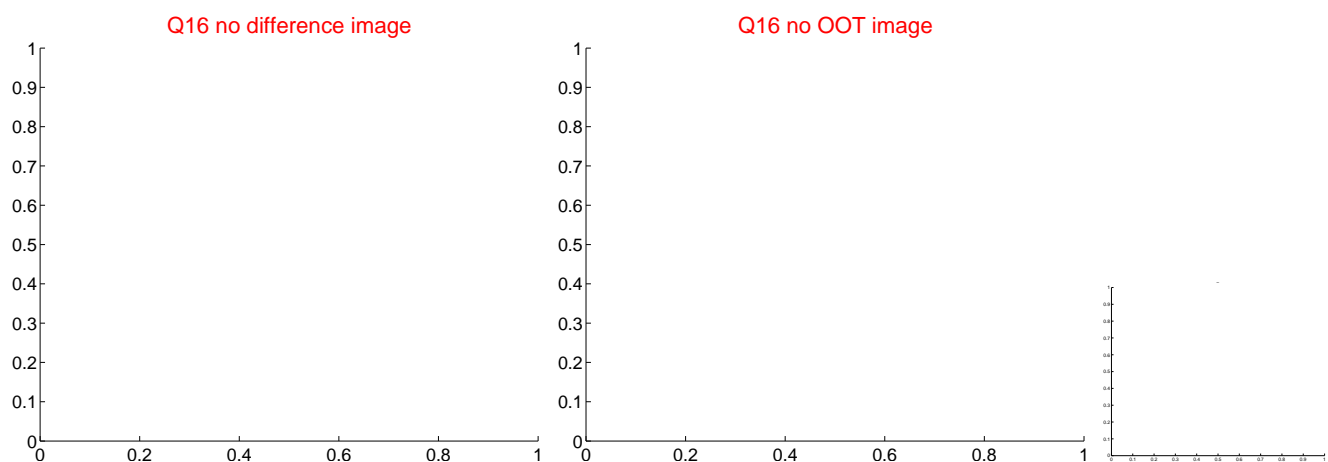
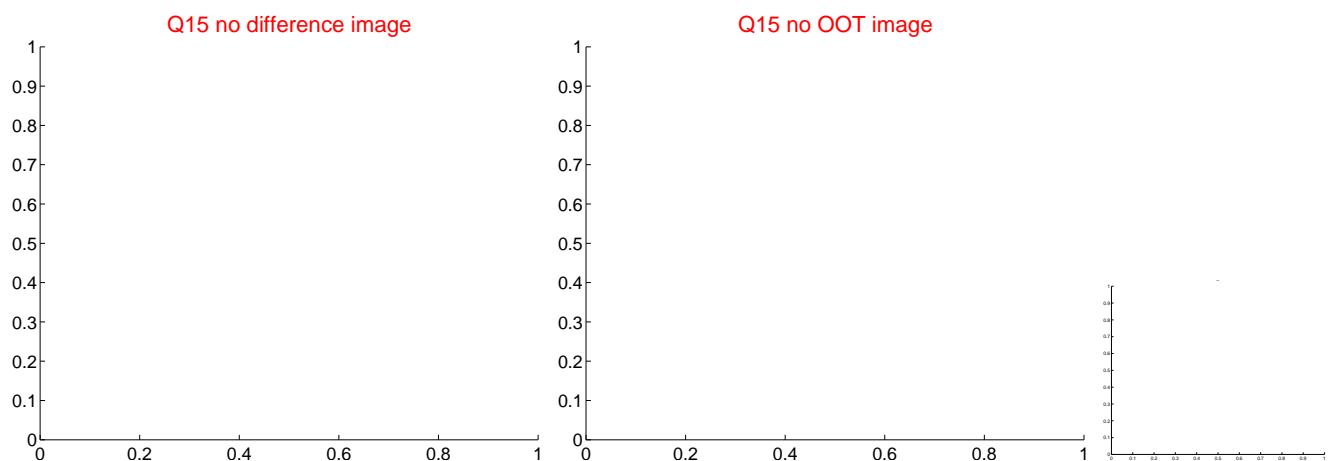
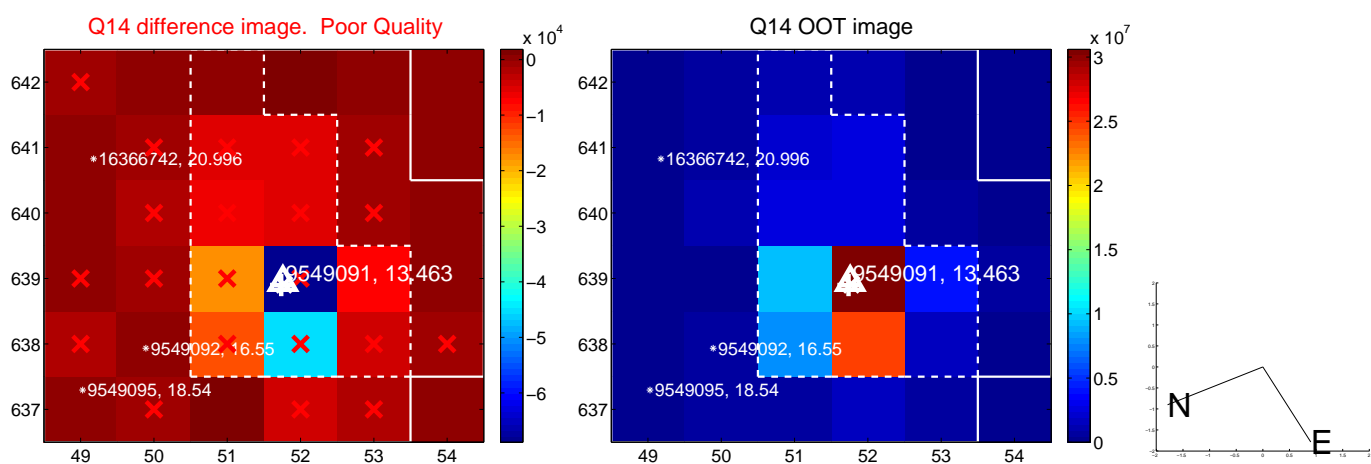
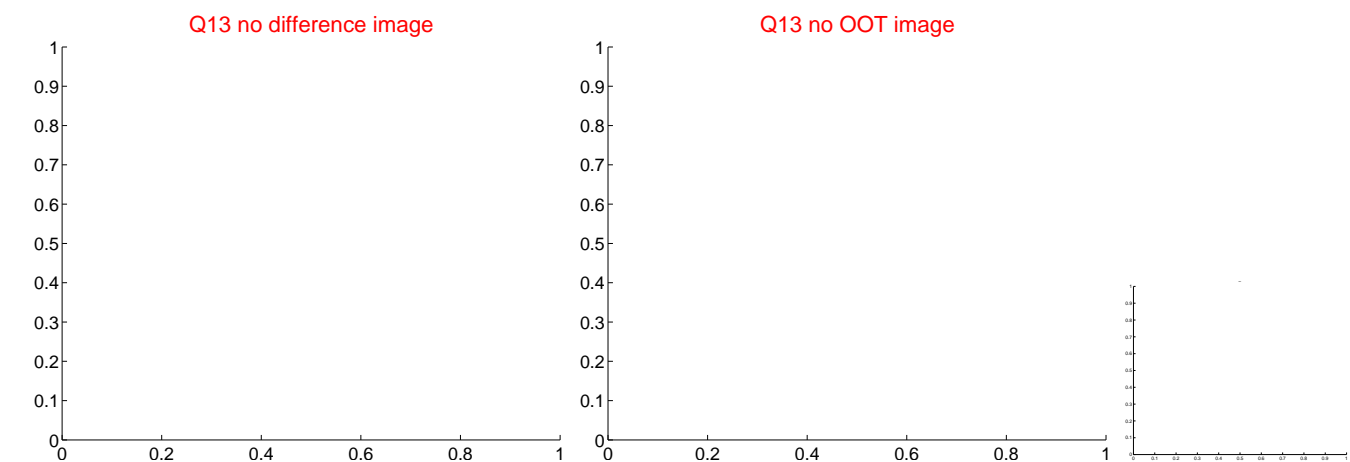
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



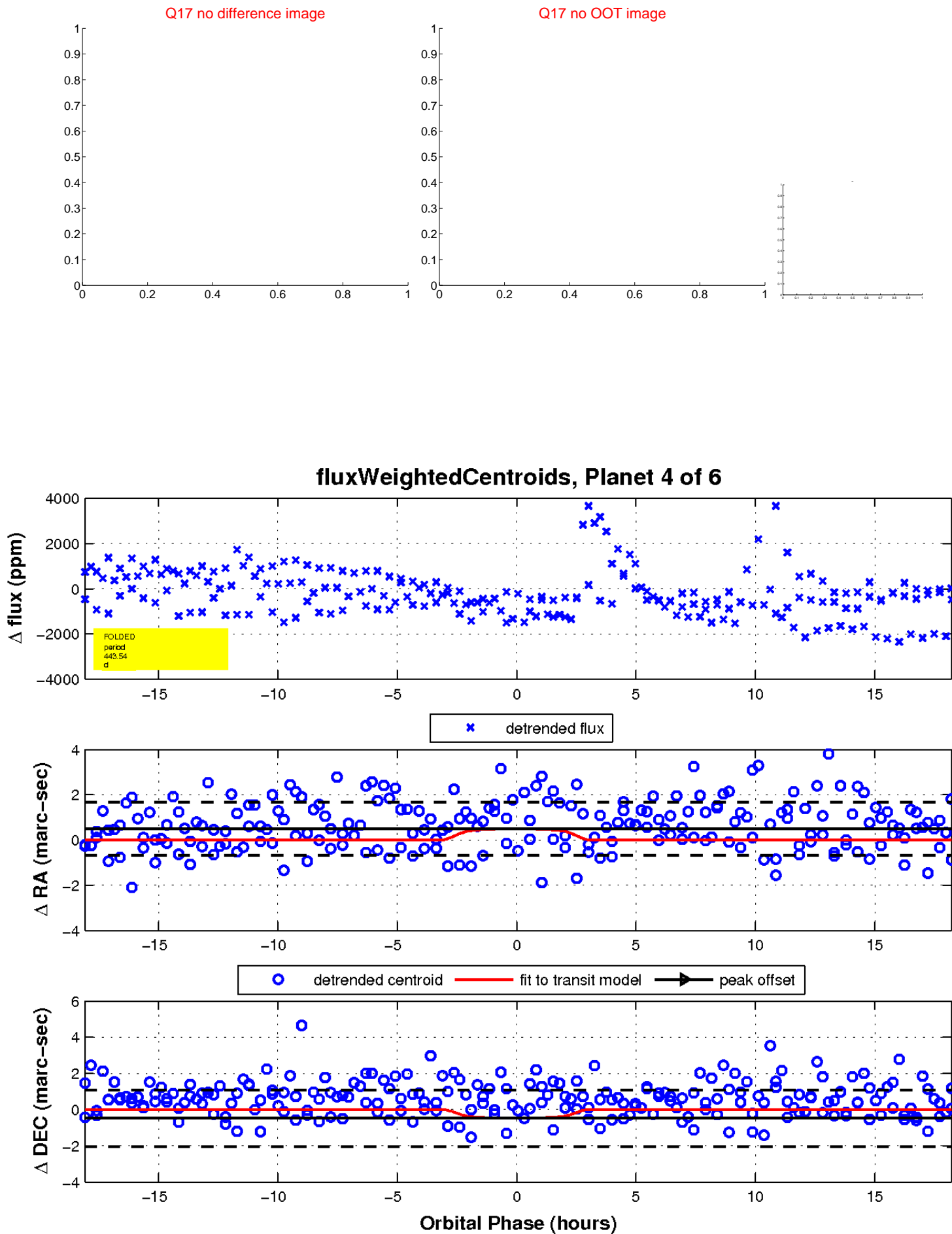
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value

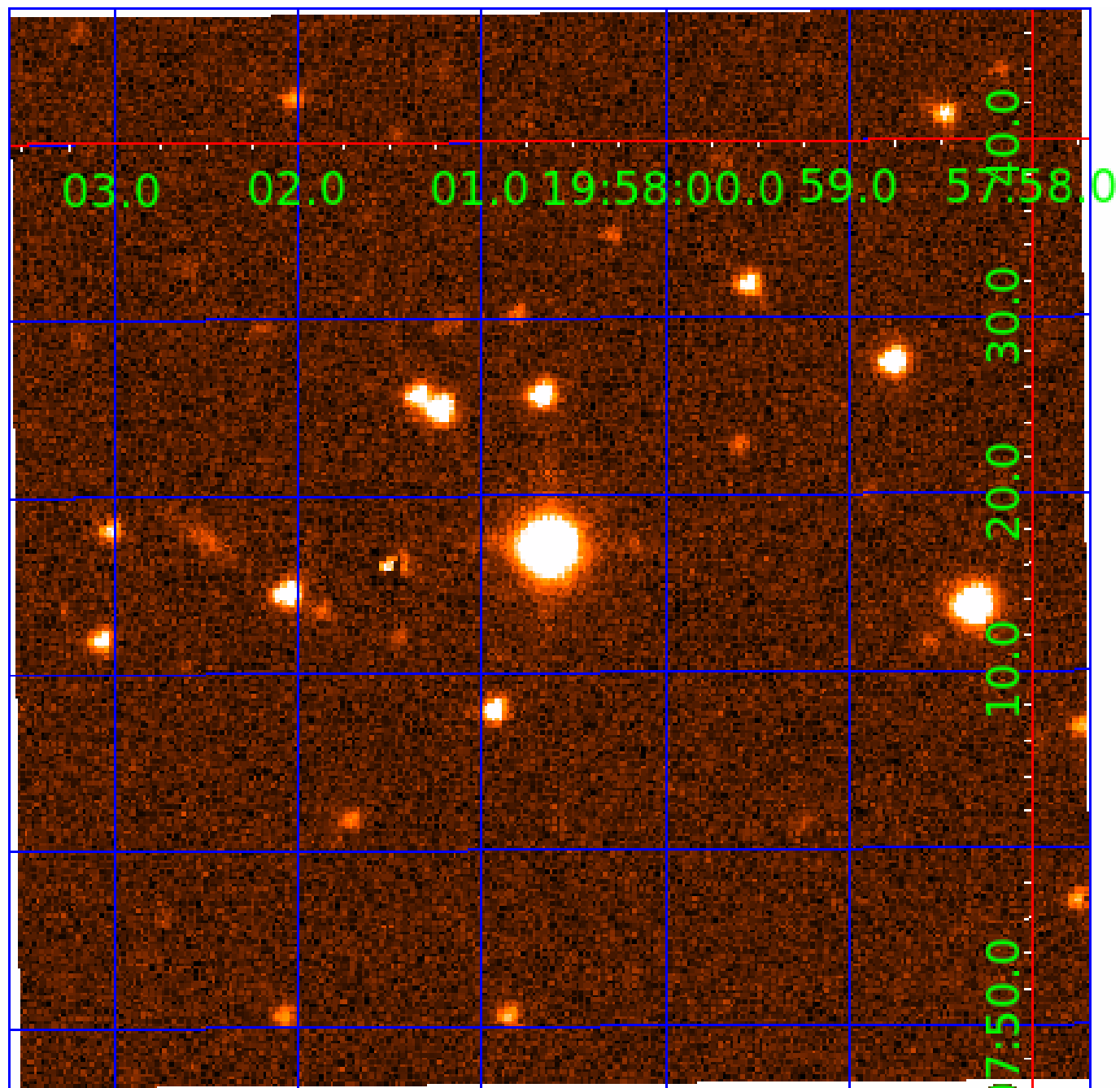


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009549091

Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R_{\star} (R_{\odot})	T_{\star} (K)	R_p (R_{\oplus})	S_p (S_{\oplus})
009549091-01	OBS	No	567.800060	187.196022	1602.2	13.326	11.6	5.6	1.90	5110	7.44	1.35
009549091-02	OBS	No	591.689902	337.016250	1784.1	15.282	17.8	8.0	1.90	5110	7.82	1.27
009549091-03	OBS	No	522.159192	160.717362	571.2	10.500	15.2	-1.0	1.90	5110	4.43	1.51
009549091-04	OBS	No	443.544138	452.231287	1137.8	6.093	15.1	7.0	1.90	5110	7.77	1.87
009549091-05	OBS	No	570.902531	374.292991	841.0	7.949	13.3	5.0	1.90	5110	5.84	1.34
009549091-06	OBS	No	346.974738	388.573649	1024.0	6.470	12.9	6.3	1.90	5110	12.19	2.60

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009549091-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009549091-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
009549091-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
009549091-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009549091-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009549091-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_FEW_DIFFS

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

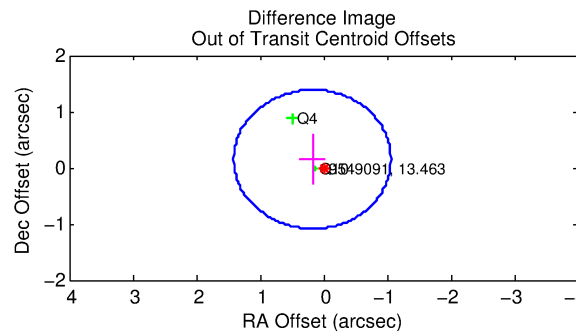
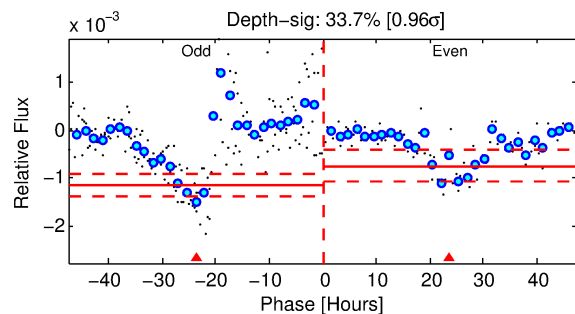
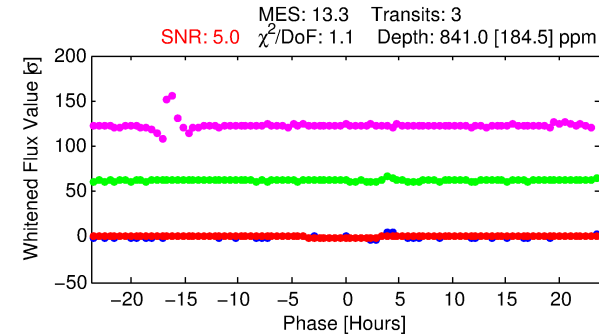
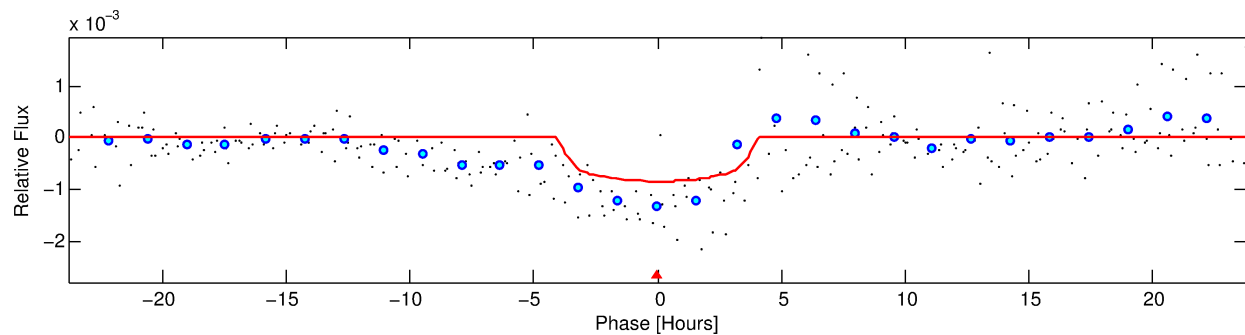
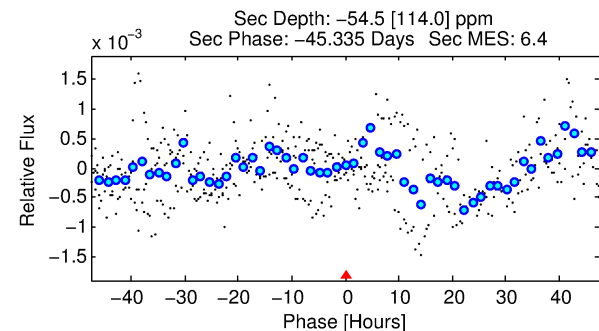
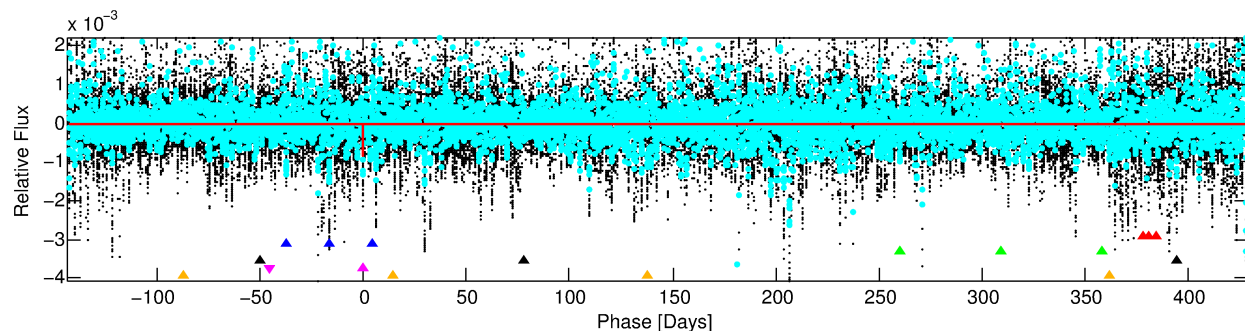
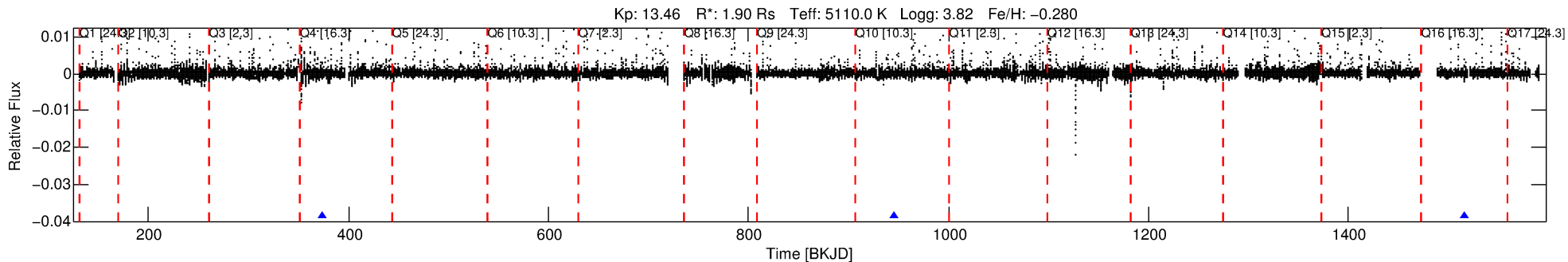
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009549091-05

No Significant Match Found

DV One-Page Summary

KIC: 9549091 Candidate: 5 of 6 Period: 570.903 d



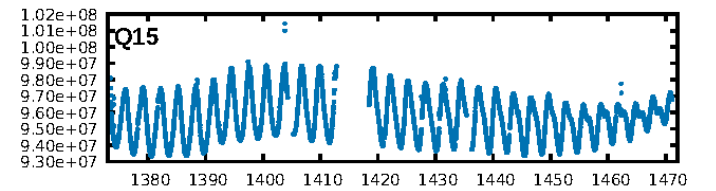
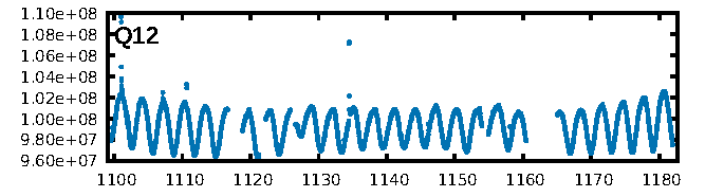
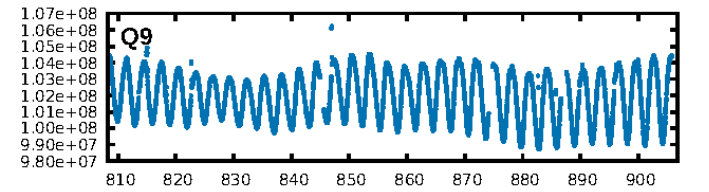
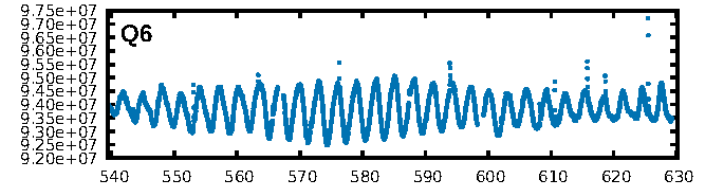
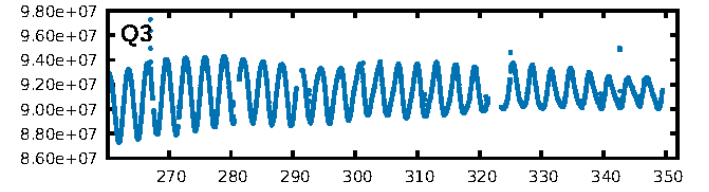
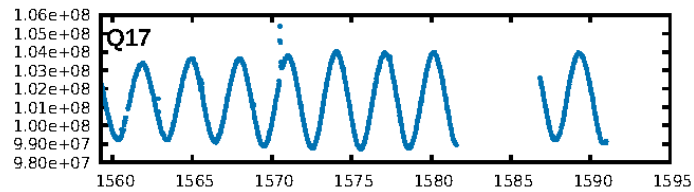
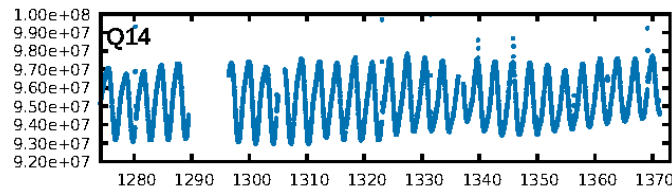
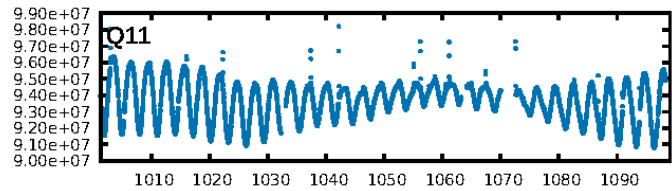
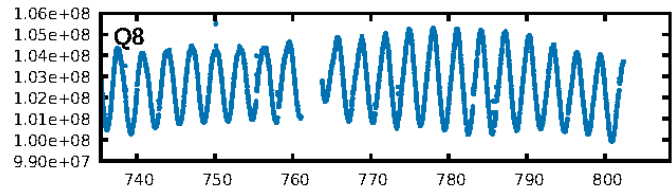
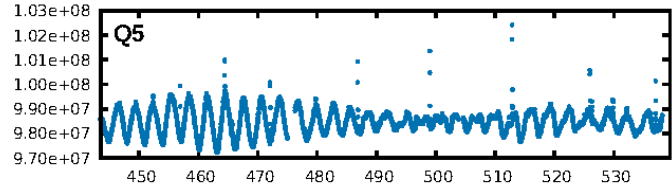
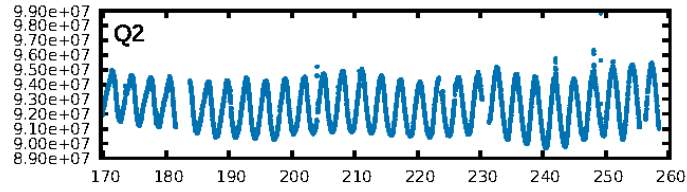
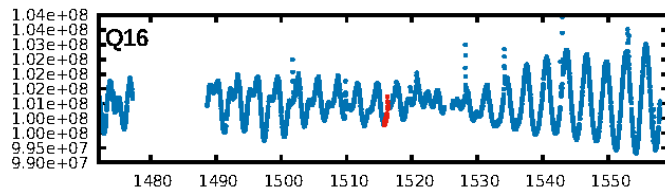
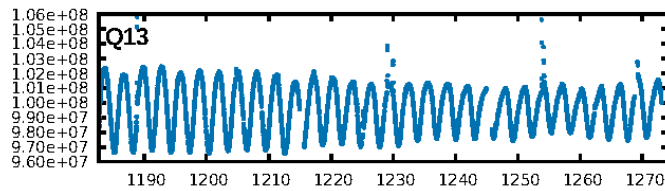
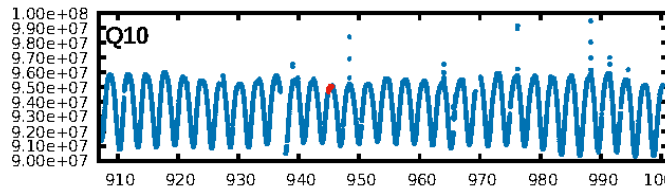
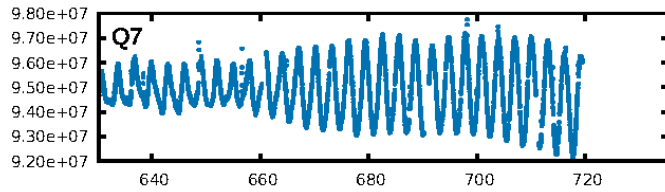
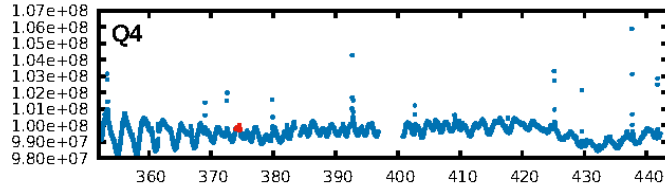
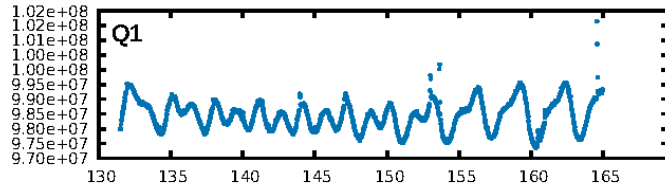
DV Fit Results:

Period = 570.90253 [0.00712] d
Epoch = 374.2930 [0.0086] BKJD
Rp/R* = 0.0282 [0.0148]
a/R* = 421.60 [802.83]
b = 0.68 [1.50]
Seff = 1.34 [1.78]
Teq = 274 [91] K
Rp = 5.84 [5.26] Re
a = 1.2840 [1.0099] AU
Ag = N/A
Teffp = N/A

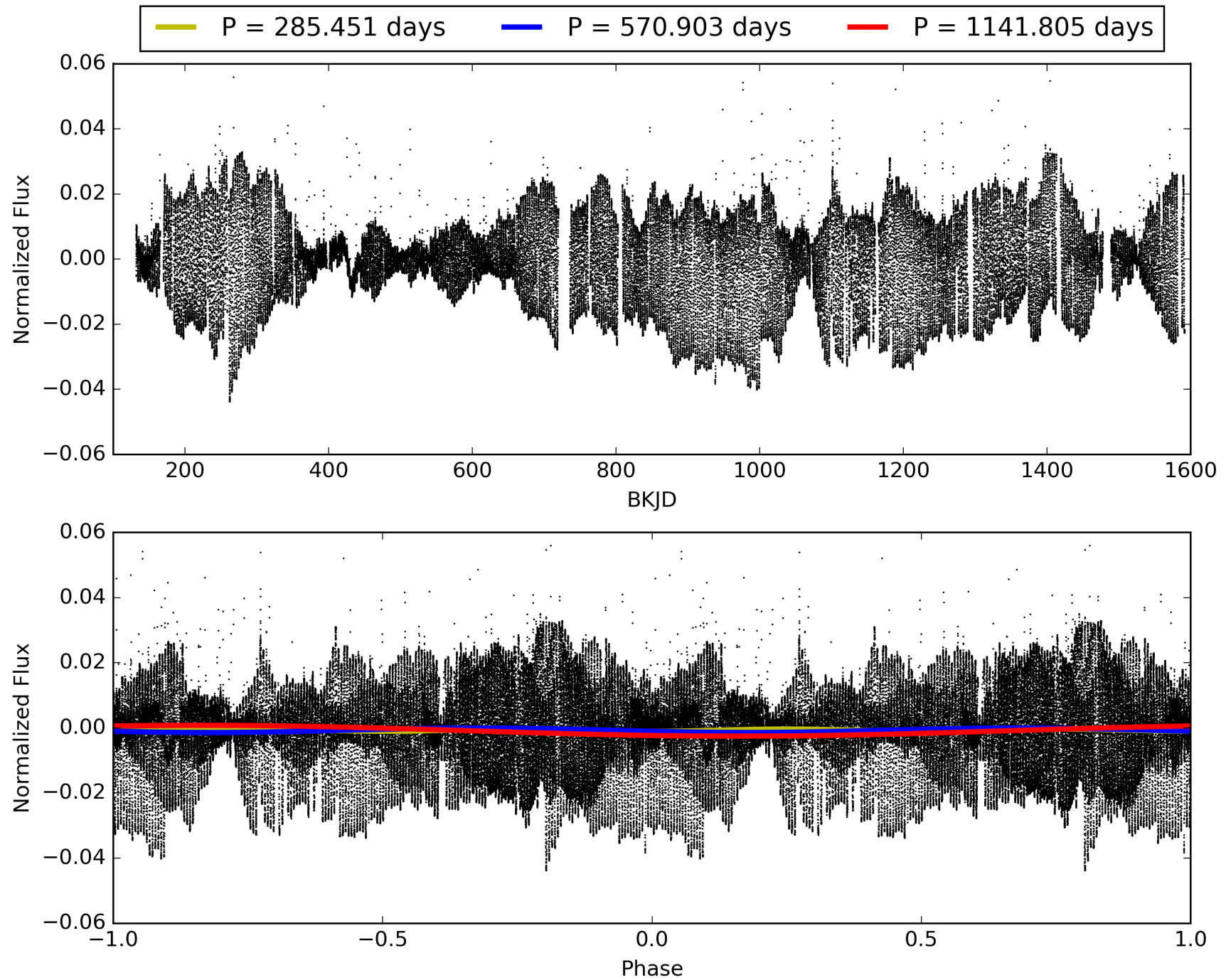
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [4.80σ]
LongPeriod-sig: 100.0% [28.96σ]
ModelChiSquare2-sig: 42.6%
ModelChiSquareGof-sig: 96.2%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.6523
Centroid-sig: 0.0%
Centroid-so: 1.691 arcsec [2.01σ]
OotOffset-rm: 0.230 arcsec [0.56σ]
KicOffset-rm: 0.336 arcsec [0.97σ]
OotOffset-st: 1/0/1/0 [2]
KicOffset-st: 1/0/1/0 [2]
DiffImageQuality-fgm: 0.00 [0/2]
DiffImageOverlap-fno: 1.00 [2/2]

TCE 009549091-05, PDC Light Curves

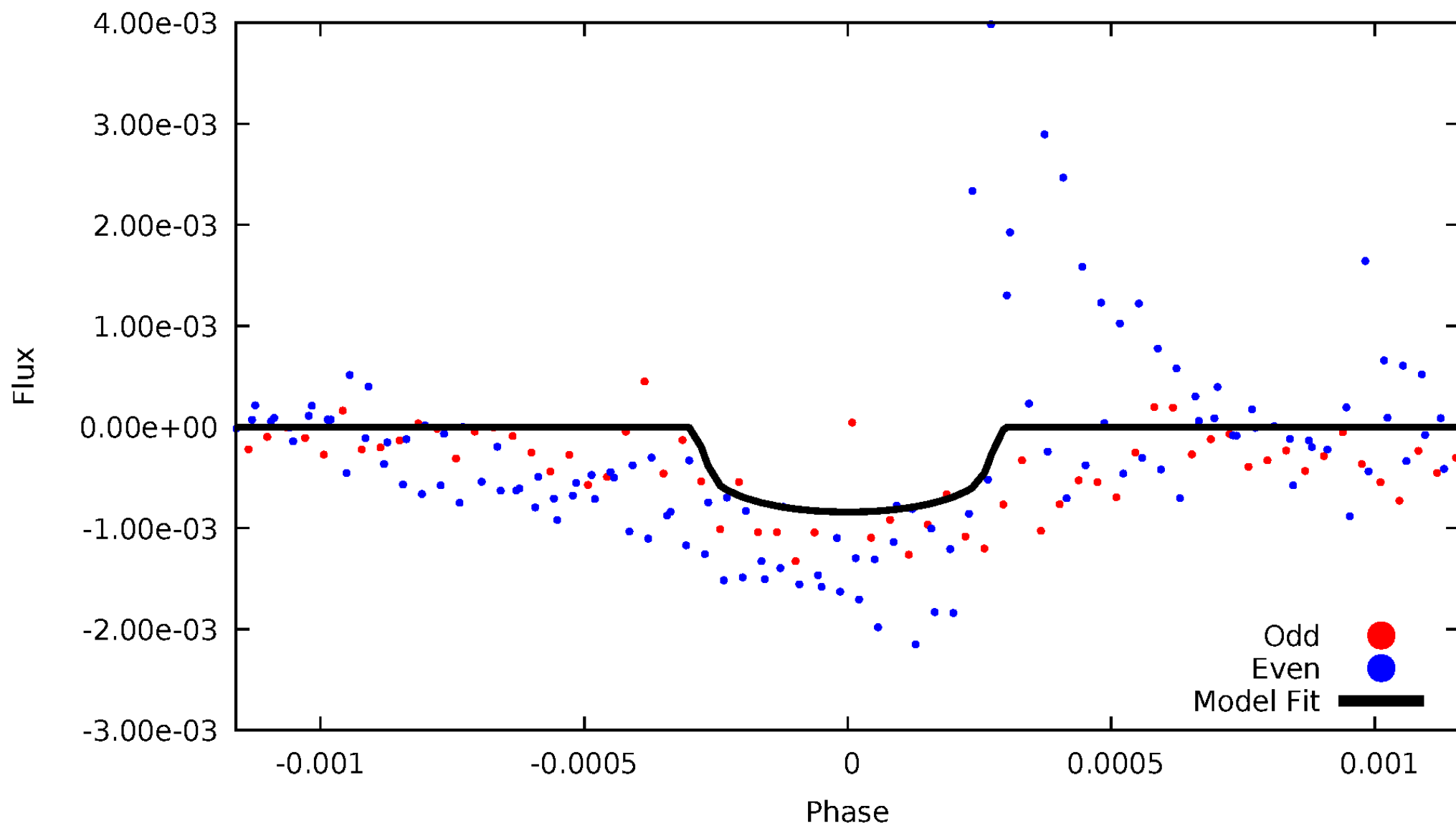


TCE 009549091-05



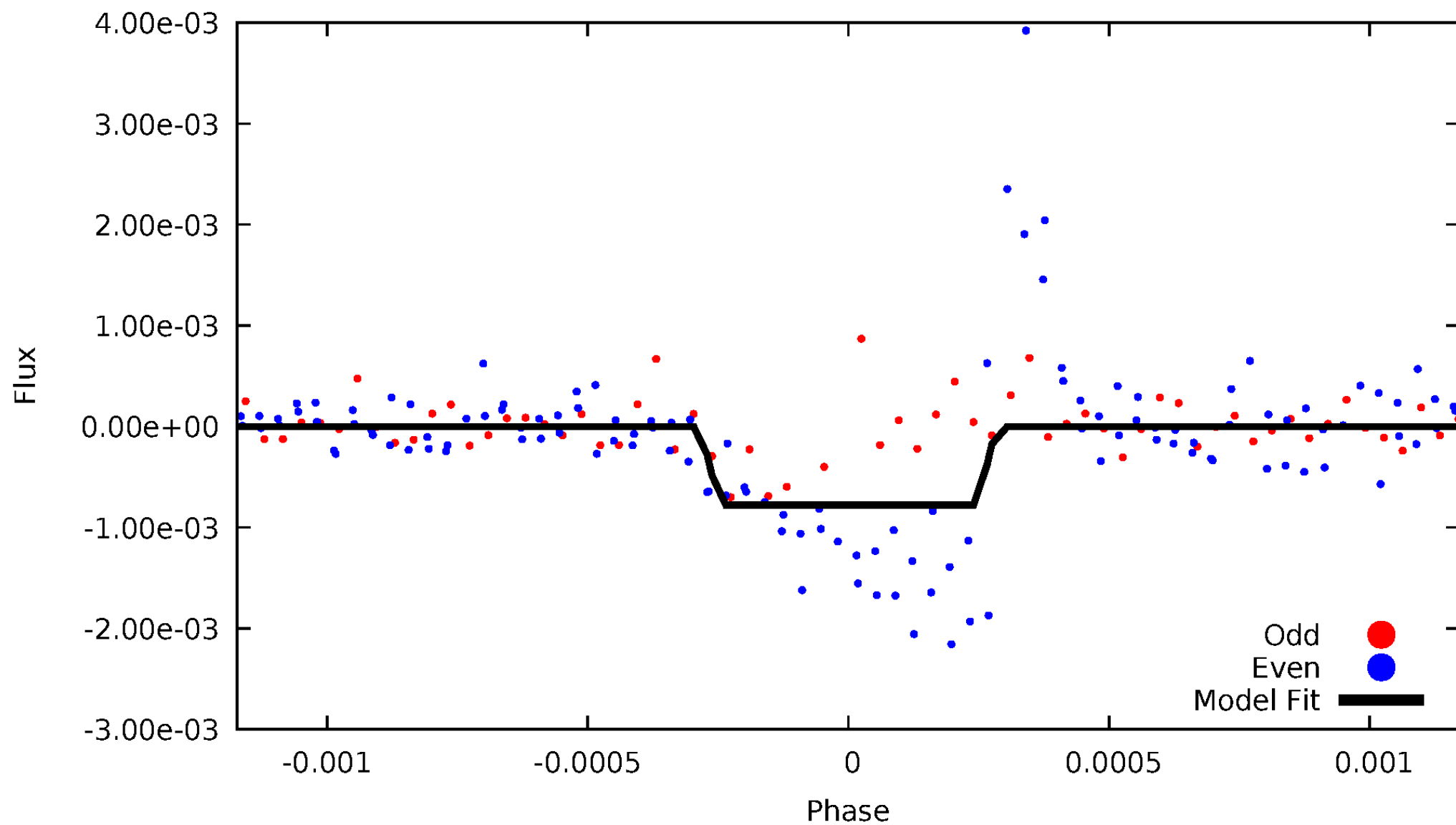
DV Odd/Even

TCE 009549091-05



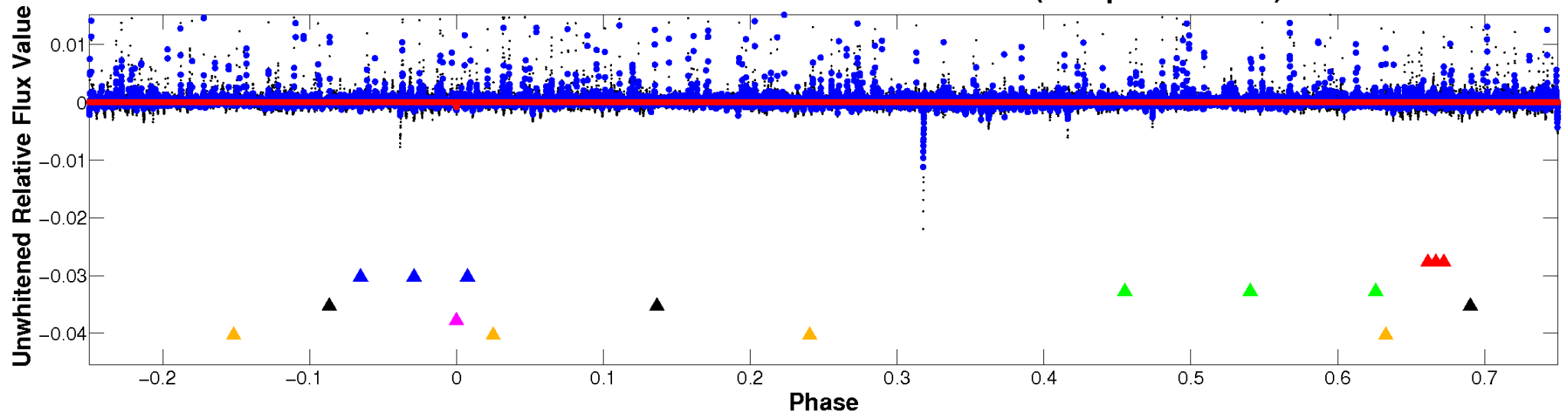
ALT Odd/Even

TCE 009549091-05

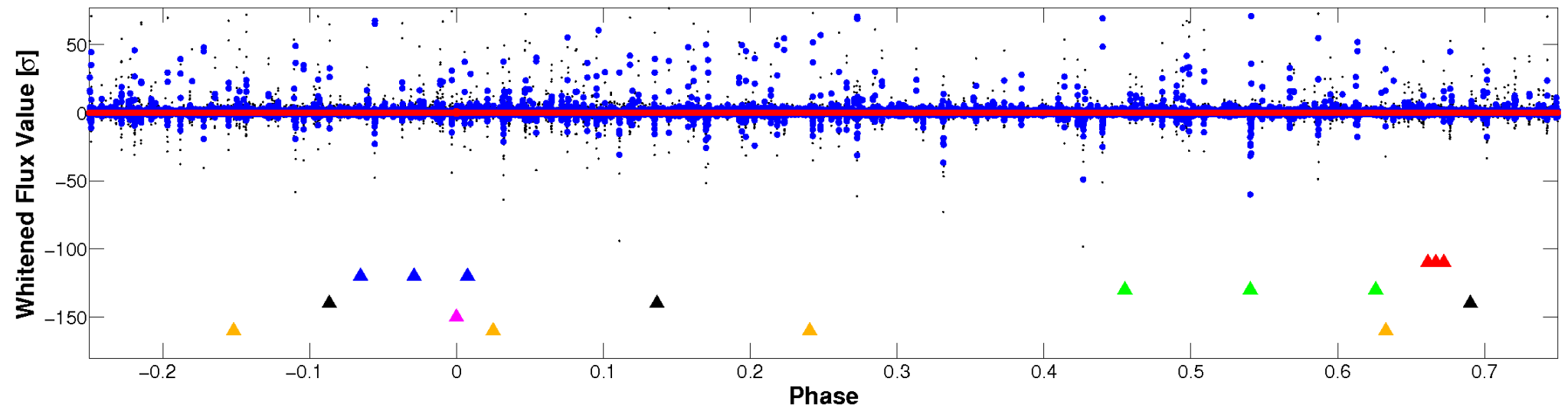


Non-Whitened Vs. Whitened Light Curve

Planet 5 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

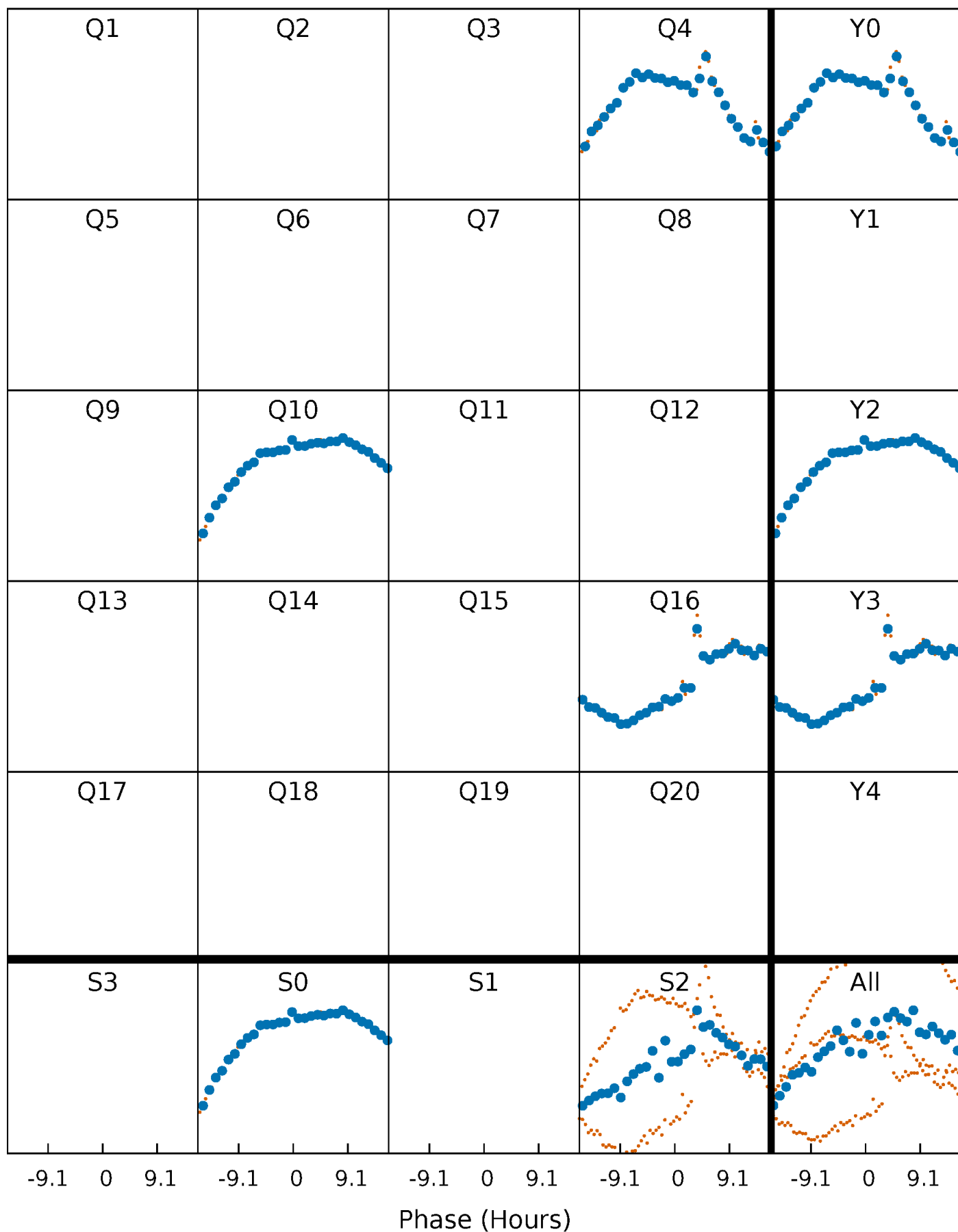


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



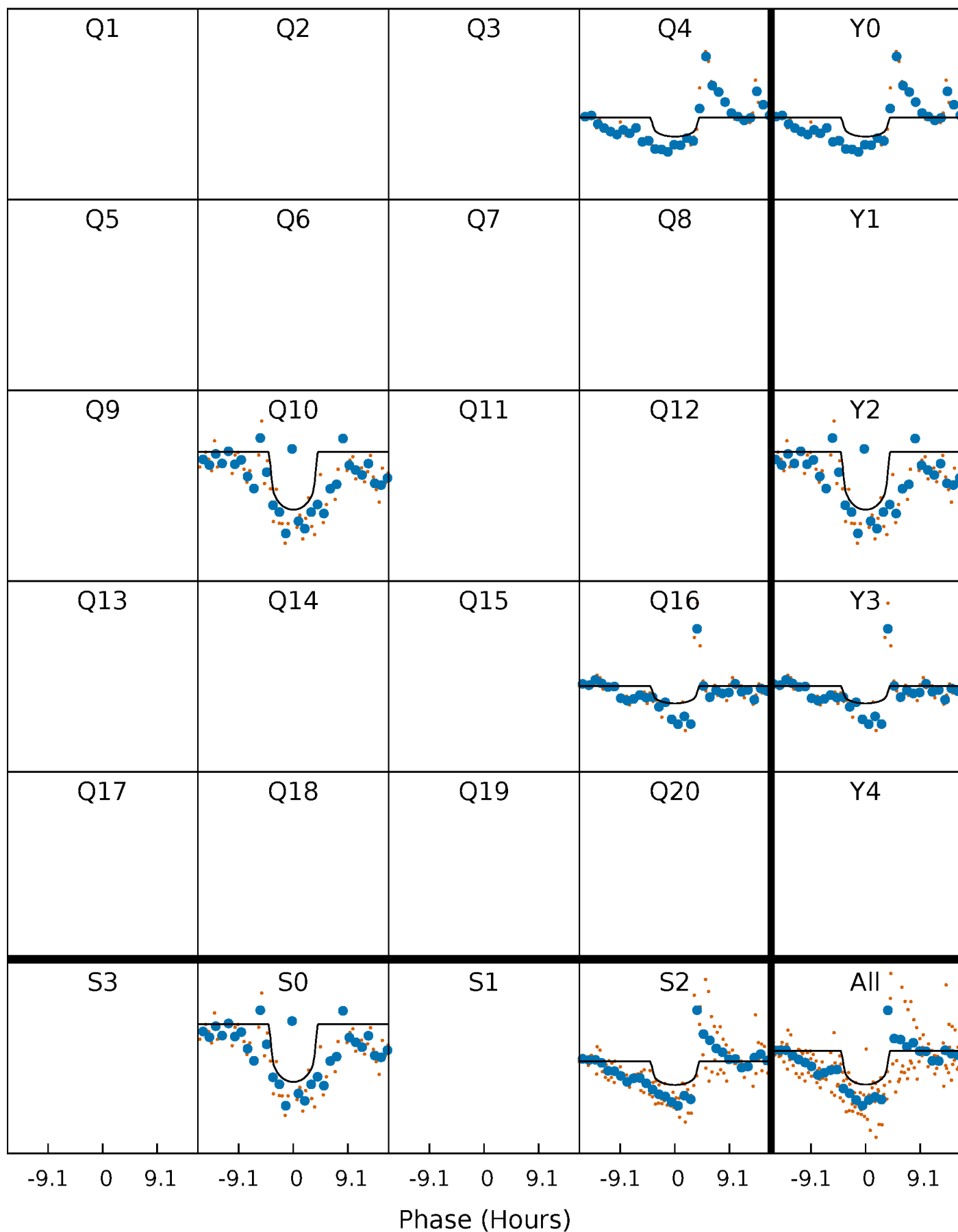
PDC Quarter-Phased Transit Curves

TCE 009549091-05 $P=570.902531$ Days $T_0=374.292991$ (BKJD)



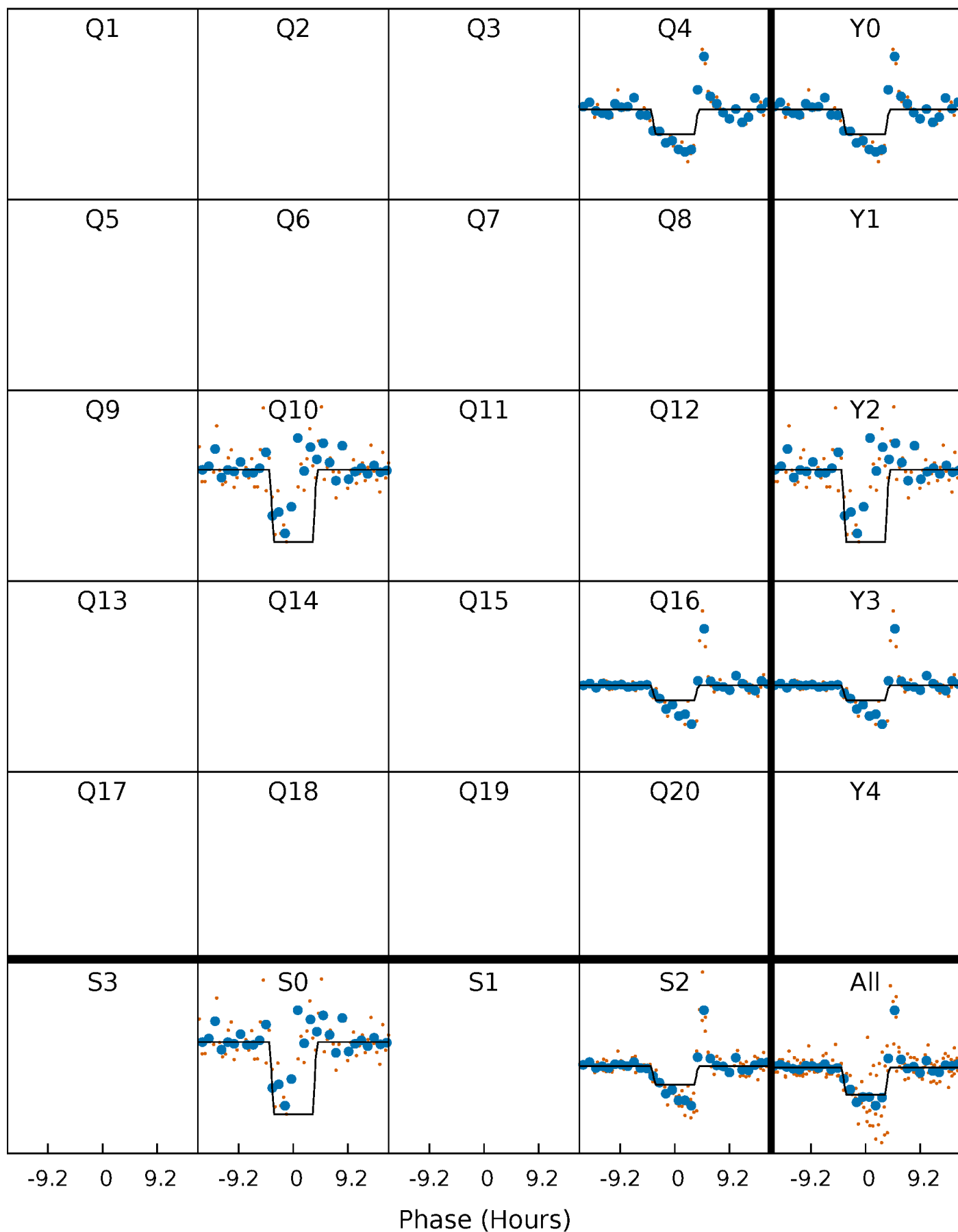
DV Quarter-Phased Transit Curves

TCE 009549091-05 $P=570.902531$ Days $T_0=374.292991$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

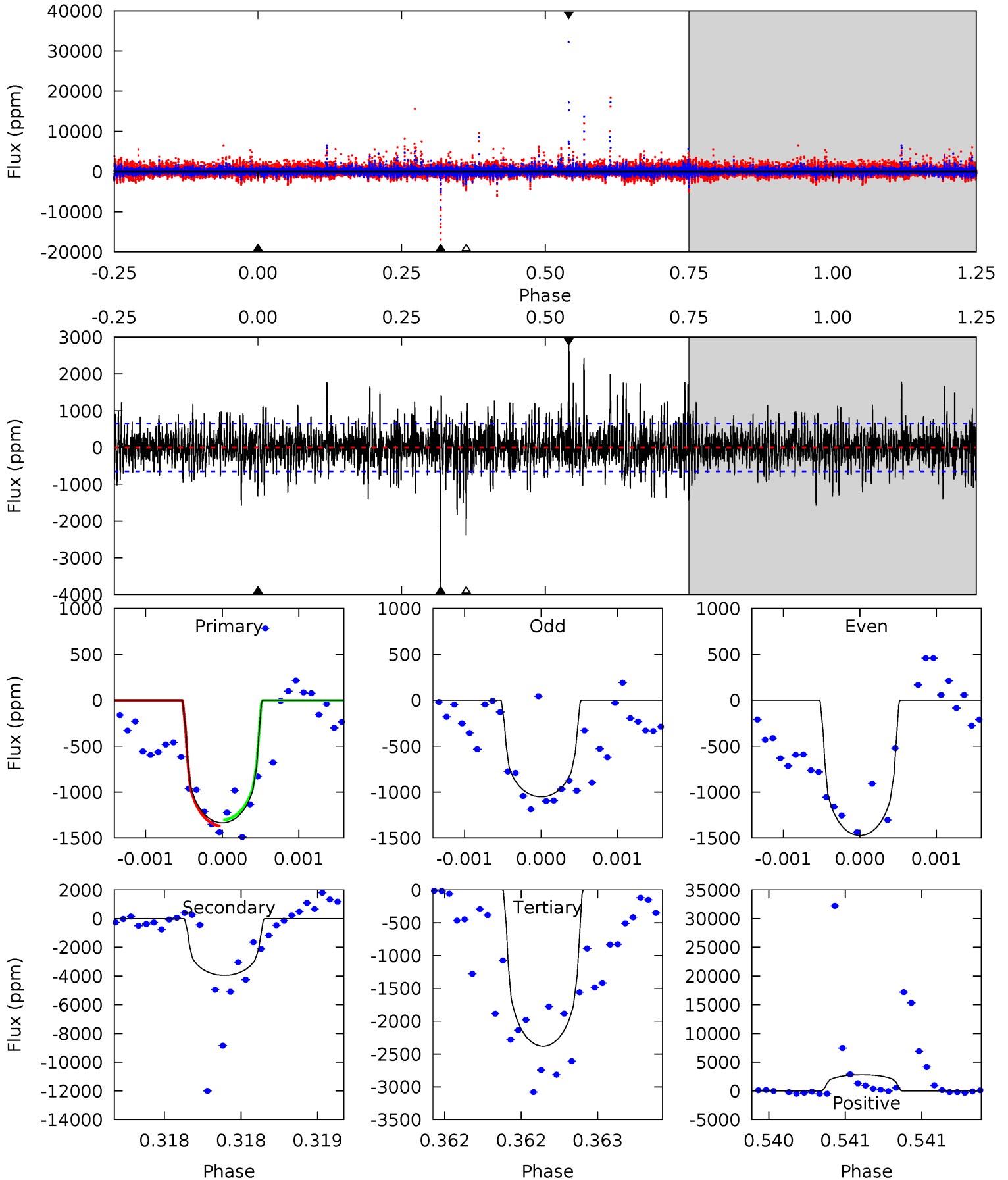
TCE 009549091-05 $P=570.872799$ Days $T_0=374.313254$ (BKJD)



DV Model-Shift Uniqueness Test

009549091-05, P = 570.902531 Days, E = 374.292991 Days

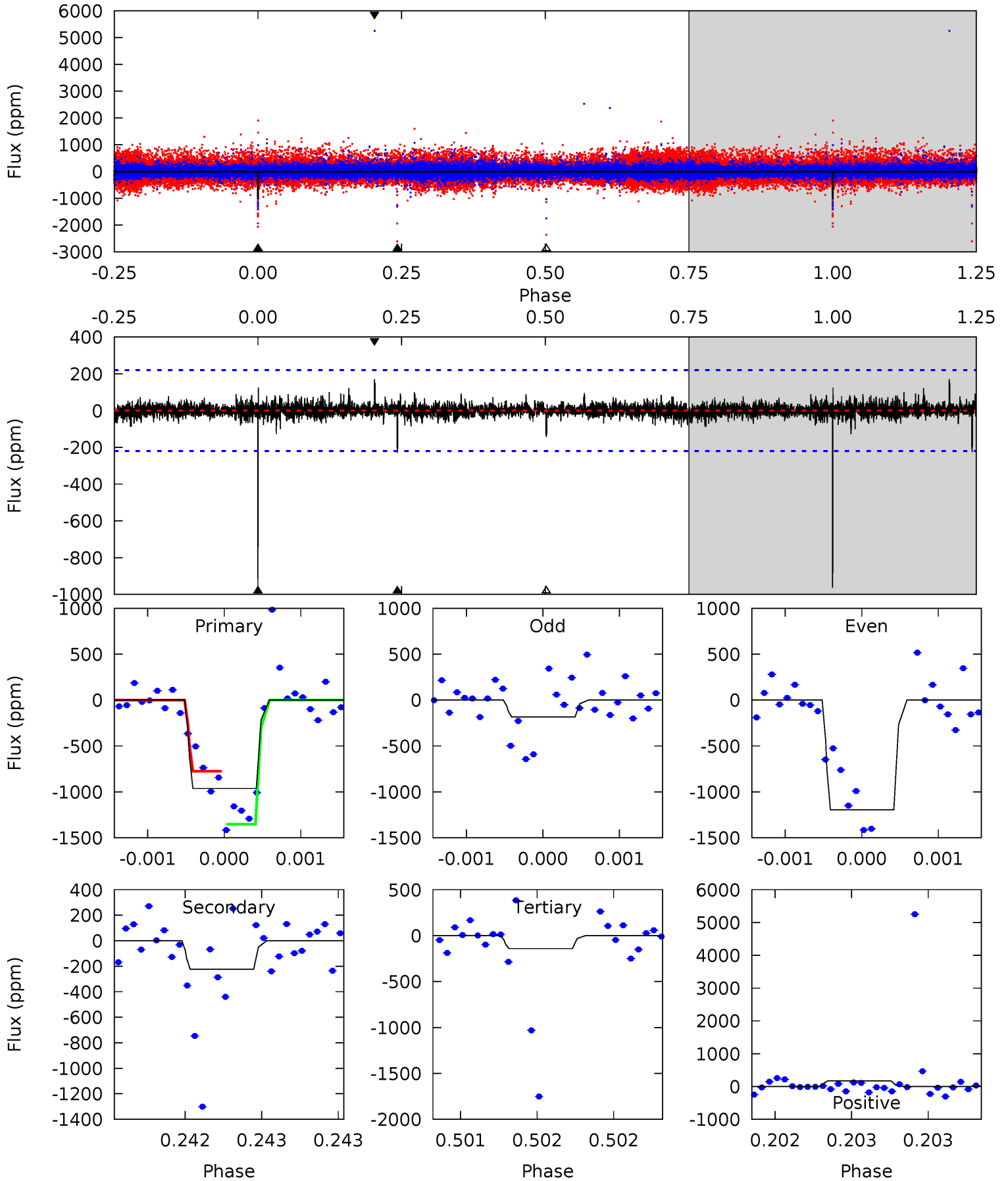
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.5	33.9	20.4	24.1	5.55	3.44	3.69	-8.99	-12.7	13.5	9.75	0.96	1.00	0.42	0.29



Alt Model-Shift Uniqueness Test

009549091-05, P = 570.872799 Days, E = 374.313254 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
24.3	5.67	3.57	4.28	5.55	3.44	0.54	20.7	20.0	2.09	1.38	11.1	0.82	0.15	7.06



Stellar Parameters For KIC 009549091

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5110^{+153}_{-138}	$3.818^{+0.805}_{-0.345}$	$-0.280^{+0.300}_{-0.250}$	$1.900^{+1.387}_{-1.134}$	$0.867^{+0.254}_{-0.157}$	$0.178^{+2.804}_{-0.116}$
	+3%/-3%	+21%/-9%	+107%/-89%	+73%/-60%	+29%/-18%	+1576%/-65%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 009549091-05 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-3951 ± 117	$5.50^{+4.85}_{-2.99}$	374^{+65}_{-69}	7349^{+4652}_{-1360}	$121480^{+463697}_{-85516}$
Alt.	-224 ± 40	$5.46^{+4.01}_{-3.03}$	375^{+67}_{-67}	3987^{+1124}_{-553}	7058^{+27412}_{-4807}

T_{max} = Theoretical Maximum Planetary Temperature
 T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)
 A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{\text{obs}} \gg T_{\text{max}}$ AND $A_{\text{obs}} \gg 1.0$

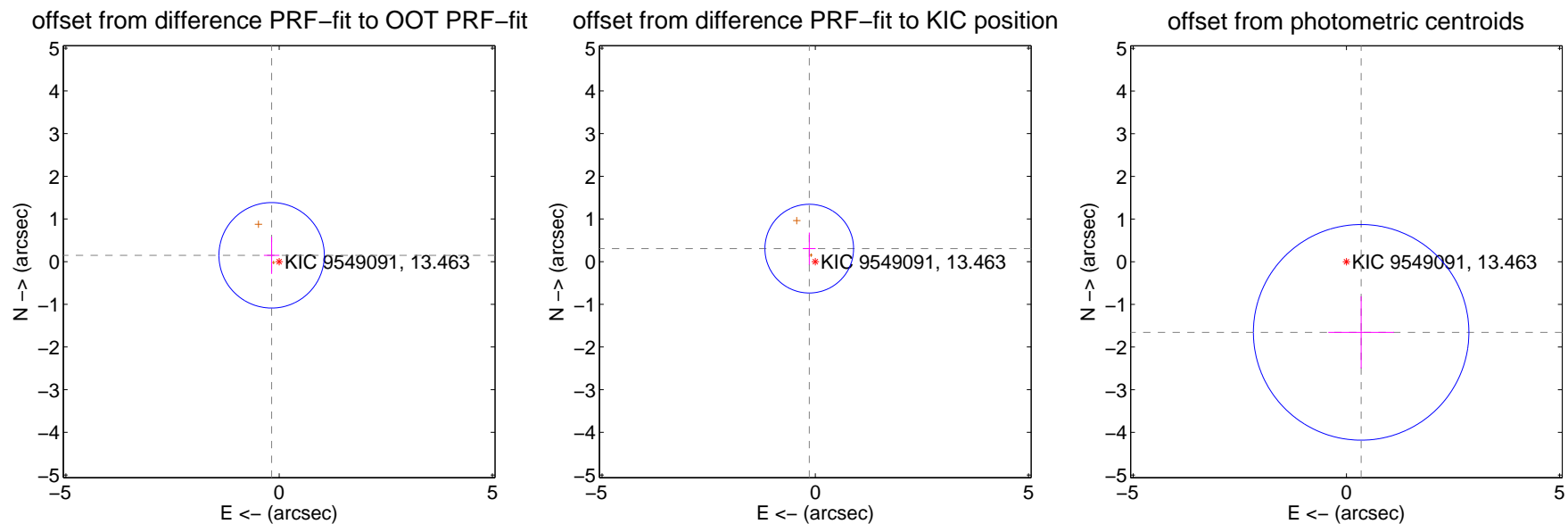
DV Centroid Data

Supplemental centroid analysis for 009549091-05. Kepler magnitude: 13.46. Transit SNR 5.04

There are 0 quarters with good PRF difference image offsets

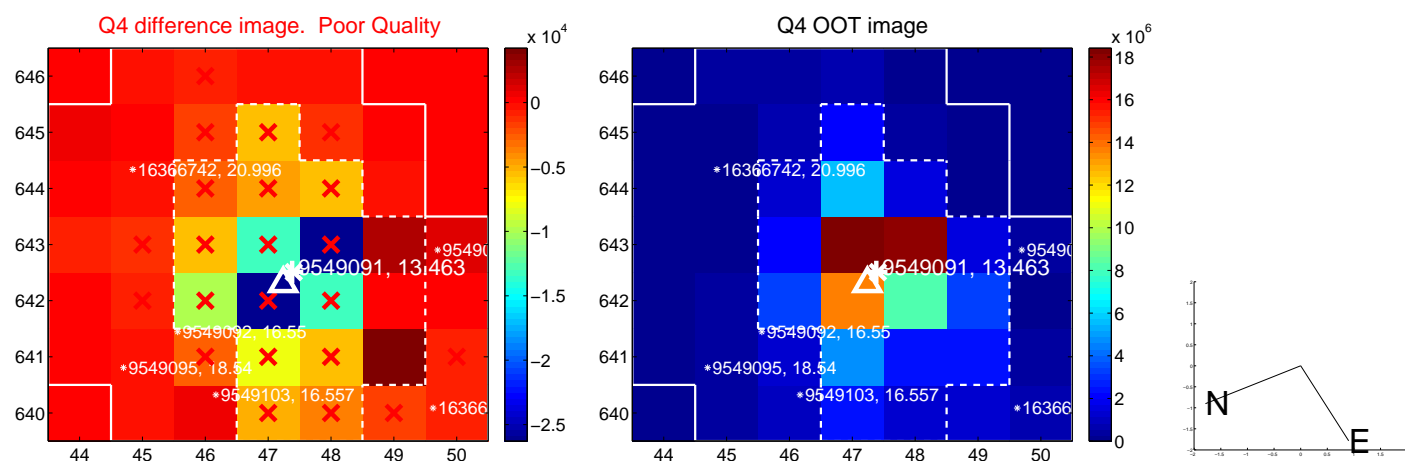
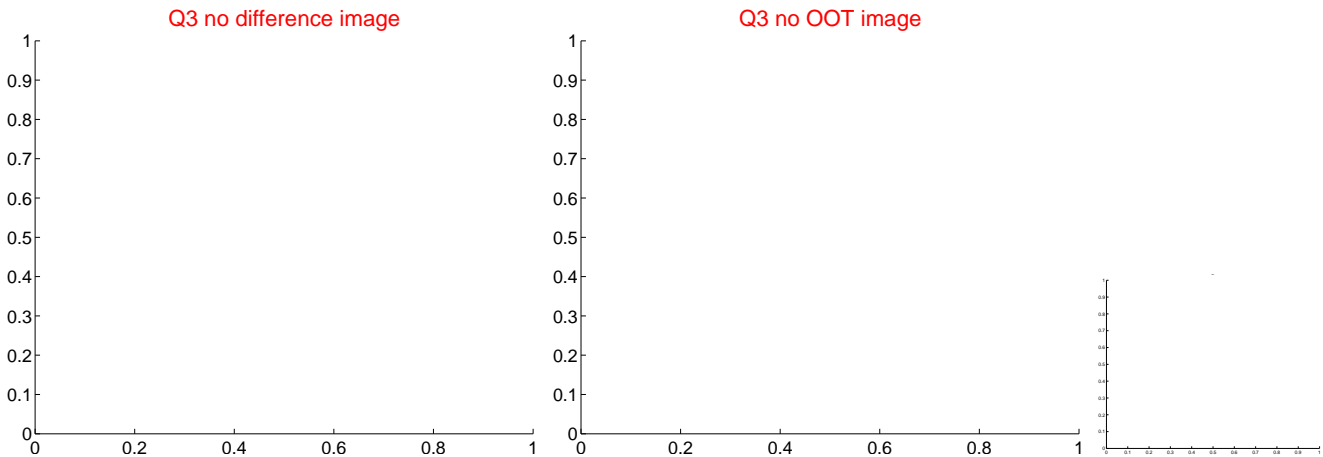
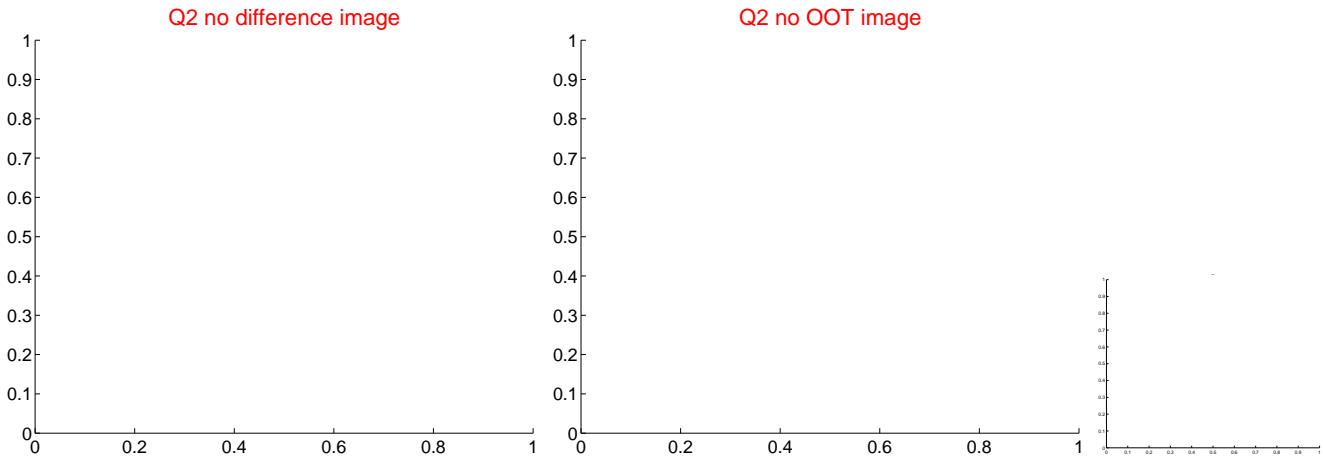
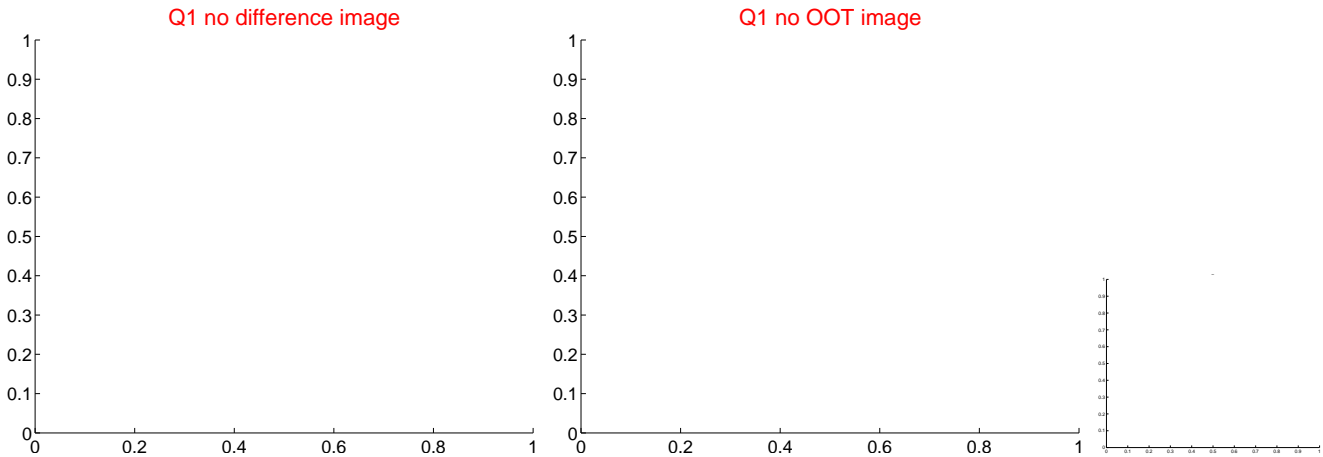
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.230 ± 0.412	0.56	0.176 ± 0.183	0.148 ± 0.434
PRF-fit source offset from KIC position	0.336 ± 0.346	0.97	0.141 ± 0.148	0.305 ± 0.376
photometric centroid source offset	1.69 ± 0.84	2.01	-0.35 ± 0.77	-1.66 ± 0.85



Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

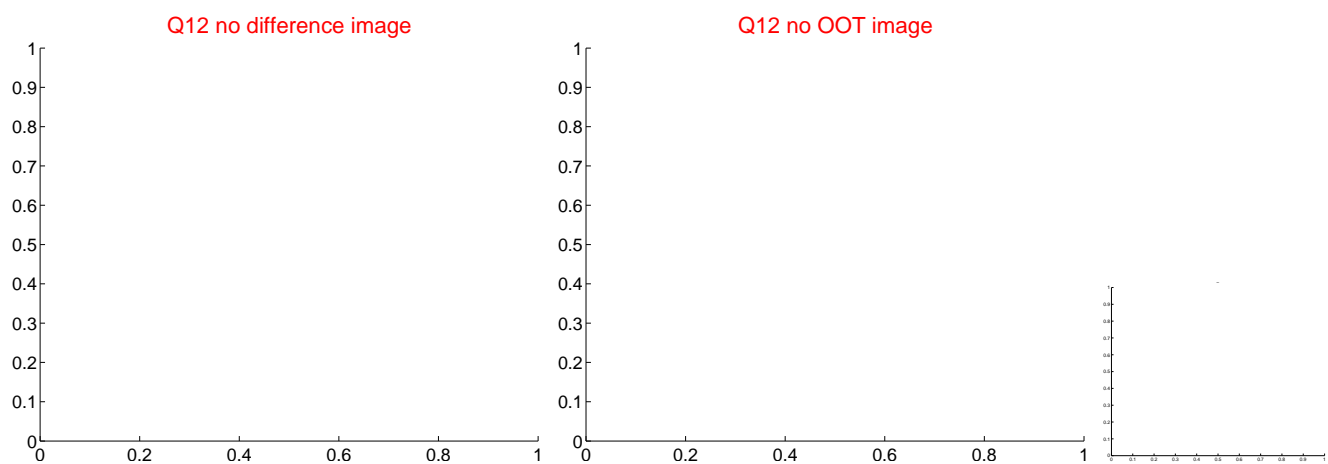
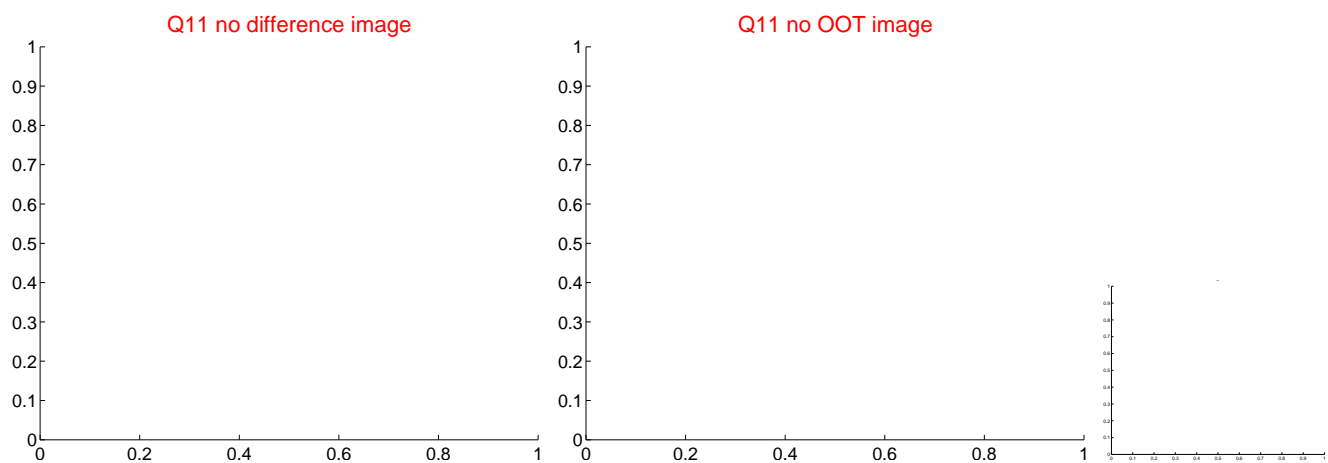
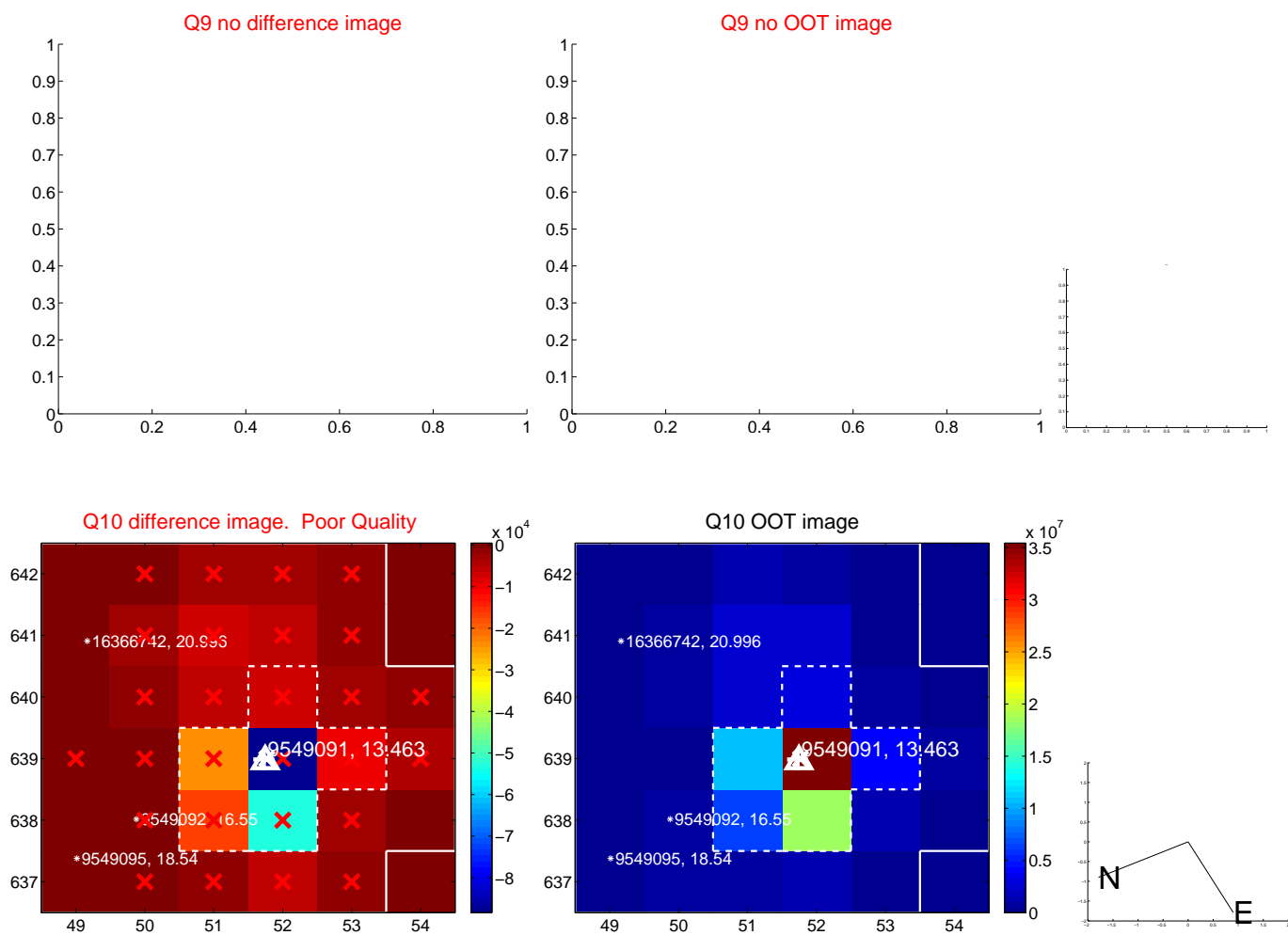
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



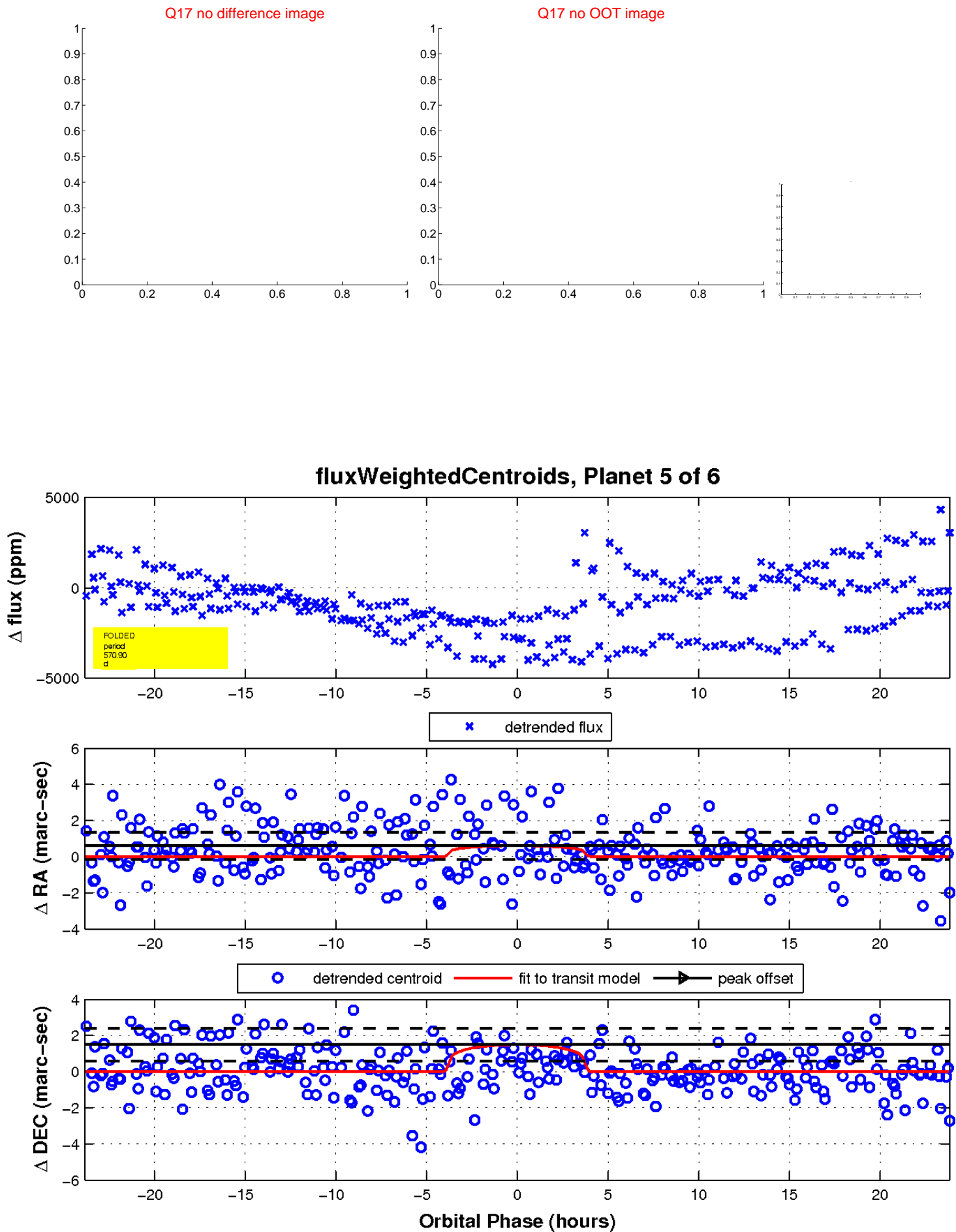
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



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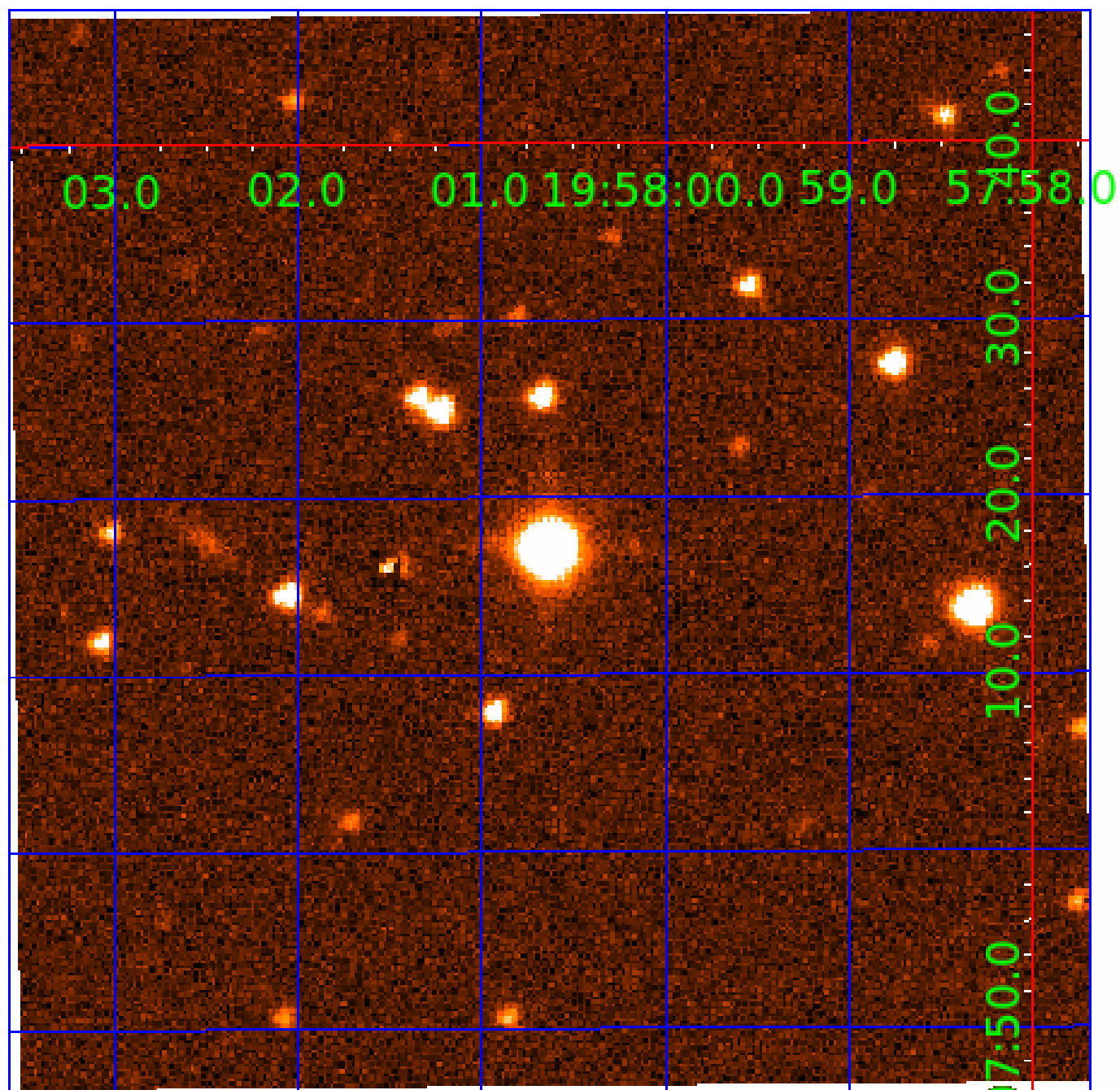


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009549091

Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R_{\star} (R_{\odot})	T_{\star} (K)	R_p (R_{\oplus})	S_p (S_{\oplus})
009549091-01	OBS	No	567.800060	187.196022	1602.2	13.326	11.6	5.6	1.90	5110	7.44	1.35
009549091-02	OBS	No	591.689902	337.016250	1784.1	15.282	17.8	8.0	1.90	5110	7.82	1.27
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009549091-05	OBS	No	570.902531	374.292991	841.0	7.949	13.3	5.0	1.90	5110	5.84	1.34
009549091-06	OBS	No	346.974738	388.573649	1024.0	6.470	12.9	6.3	1.90	5110	12.19	2.60

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009549091-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009549091-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
009549091-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
009549091-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009549091-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009549091-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_FEW_DIFFS

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

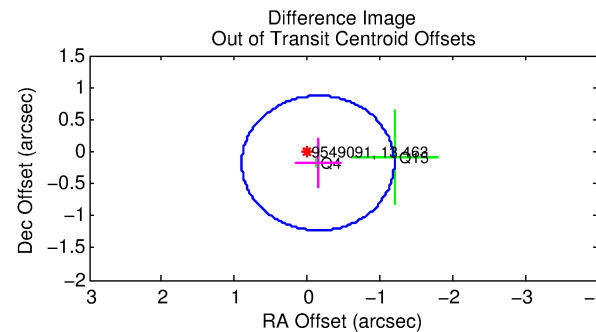
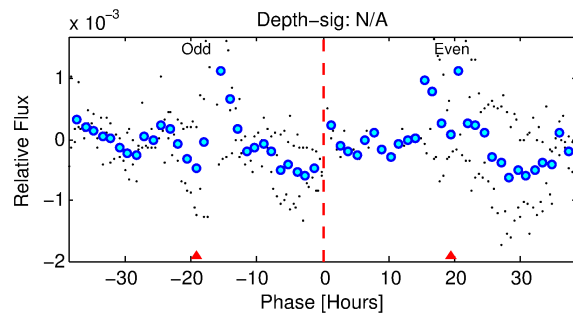
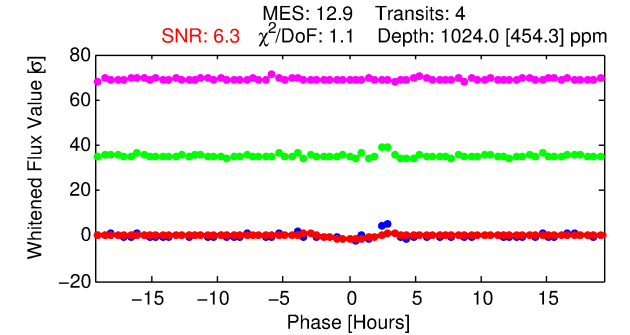
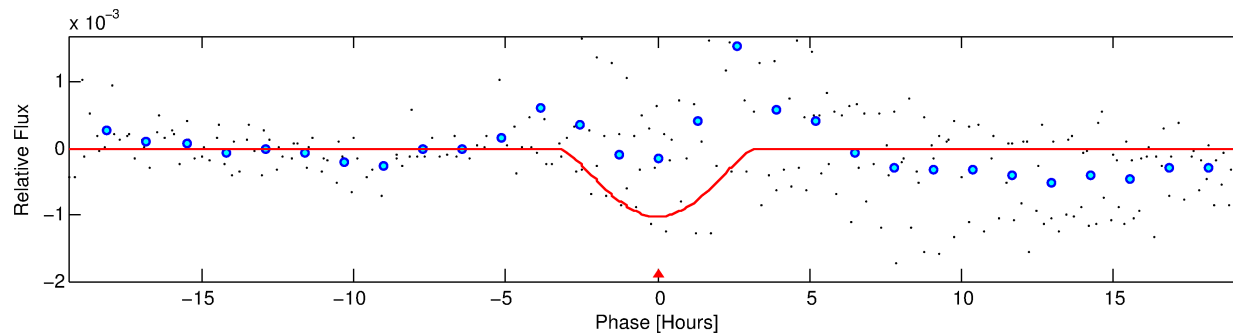
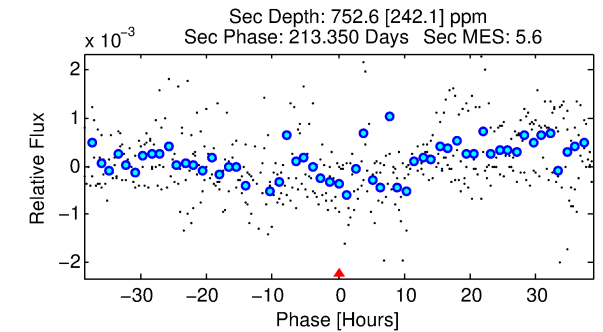
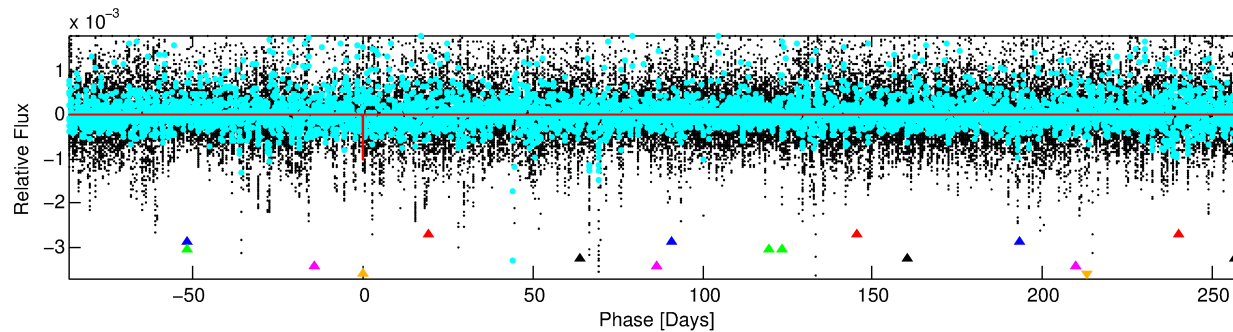
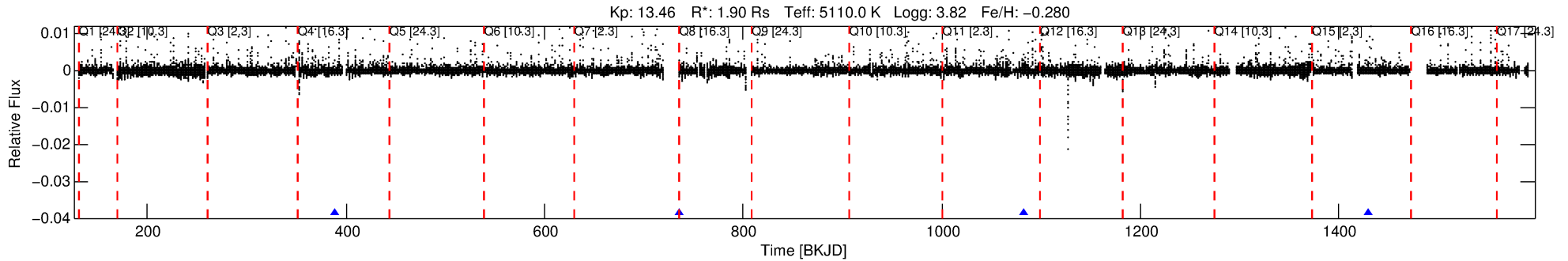
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009549091-06

No Significant Match Found

DV One-Page Summary

KIC: 9549091 Candidate: 6 of 6 Period: 346.975 d



DV Fit Results:

Period = 346.97474 [0.00840] d
Epoch = 388.5736 [0.0163] BKJD
Rp/R* = 0.0588 [0.1830]
a/R* = 142.72 [101.37]
b = 1.00 [0.28]
Seff = 2.60 [3.46]
Teff = 324 [108] K
Rp = 12.19 [38.97] Re
a = 0.9213 [0.7246] AU
Ag = 2366.86 [15091.05] [0.16σ]
Teffp = 3491 [5444] K [0.58σ]

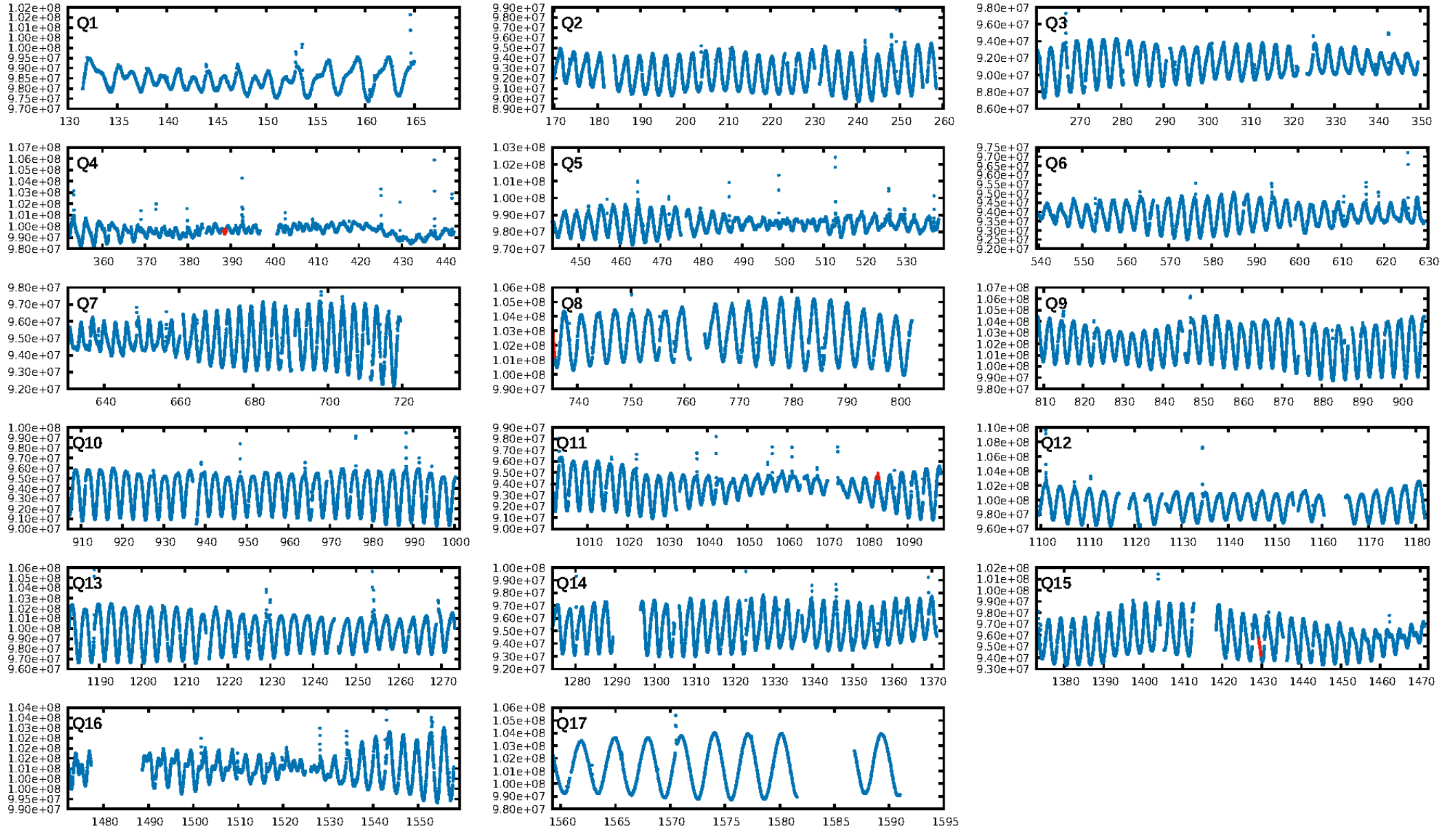
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [260.78σ]
ModelChiSquare2-sig: 7.7%
ModelChiSquareGof-sig: 99.8%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -22.37
Centroid-sig: 89.3%
Centroid-so: 0.454 arcsec [0.56σ]
OotOffset-rm: 0.233 arcsec [0.67σ]
OotOffset-st: 0/1/1/0 [2]
KicOffset-rm: 0.222 arcsec [0.69σ]
KicOffset-st: 0/1/1/0 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 1.00 [2/2]

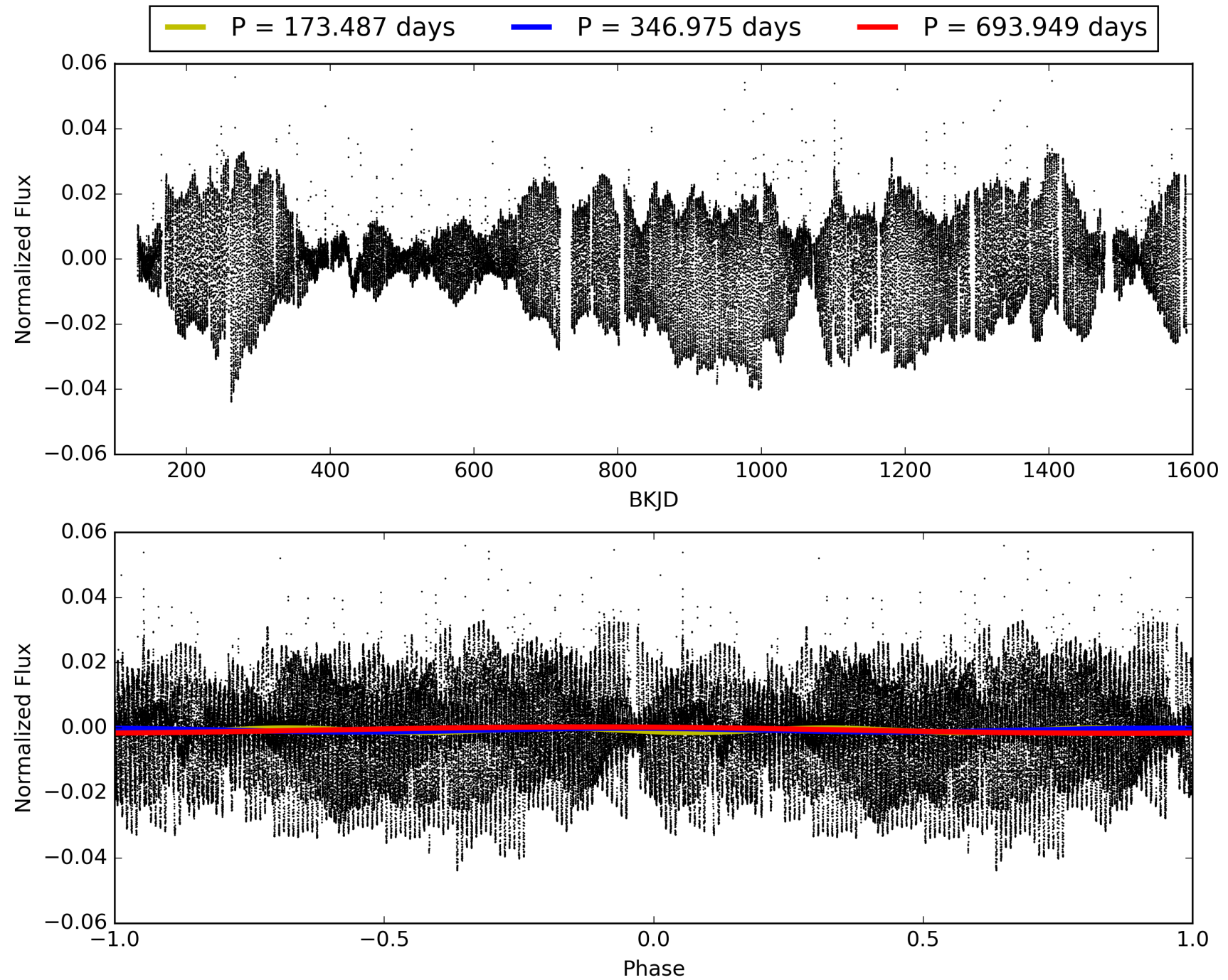
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 13:15:15 Z

This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009549091-06, PDC Light Curves

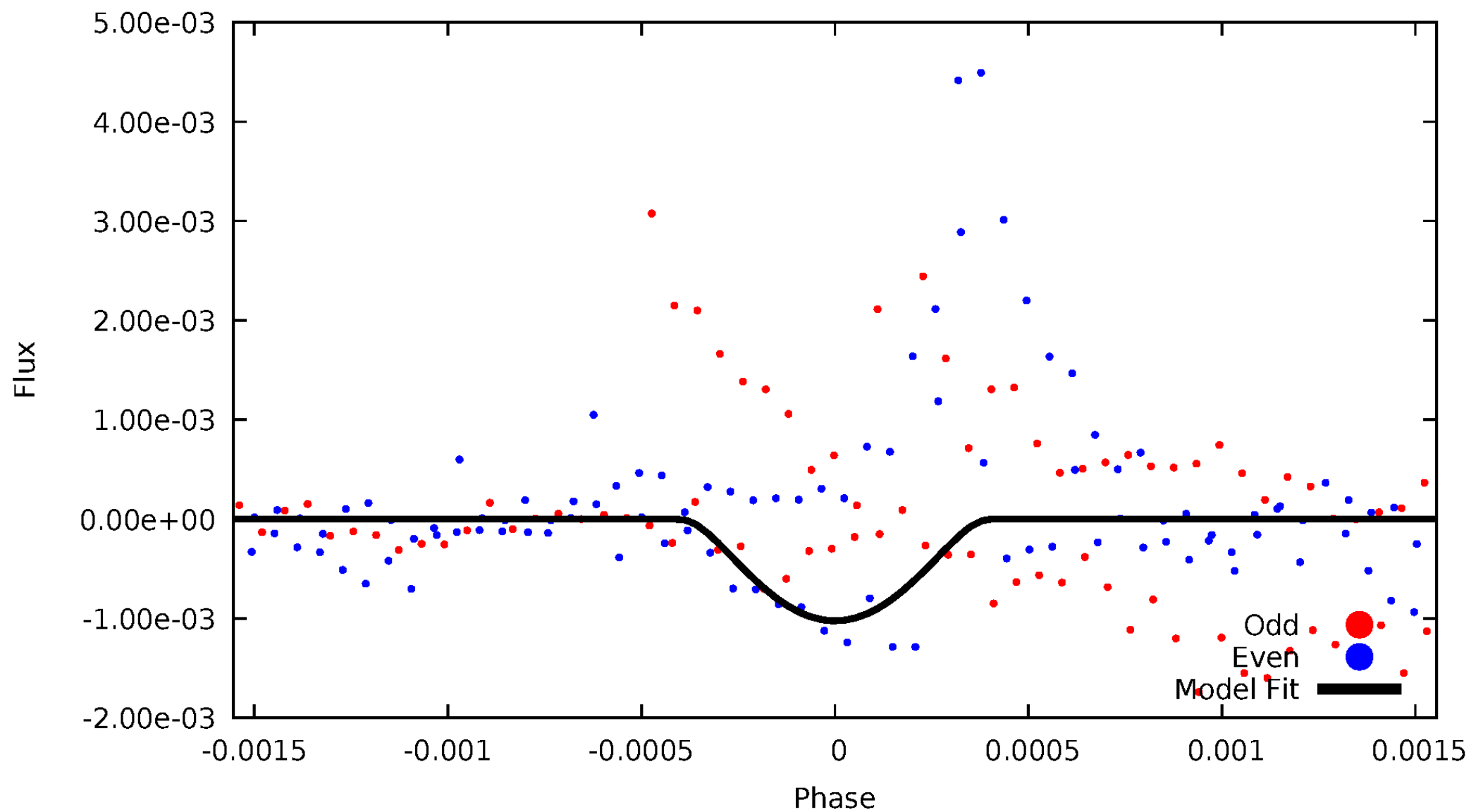


TCE 009549091-06



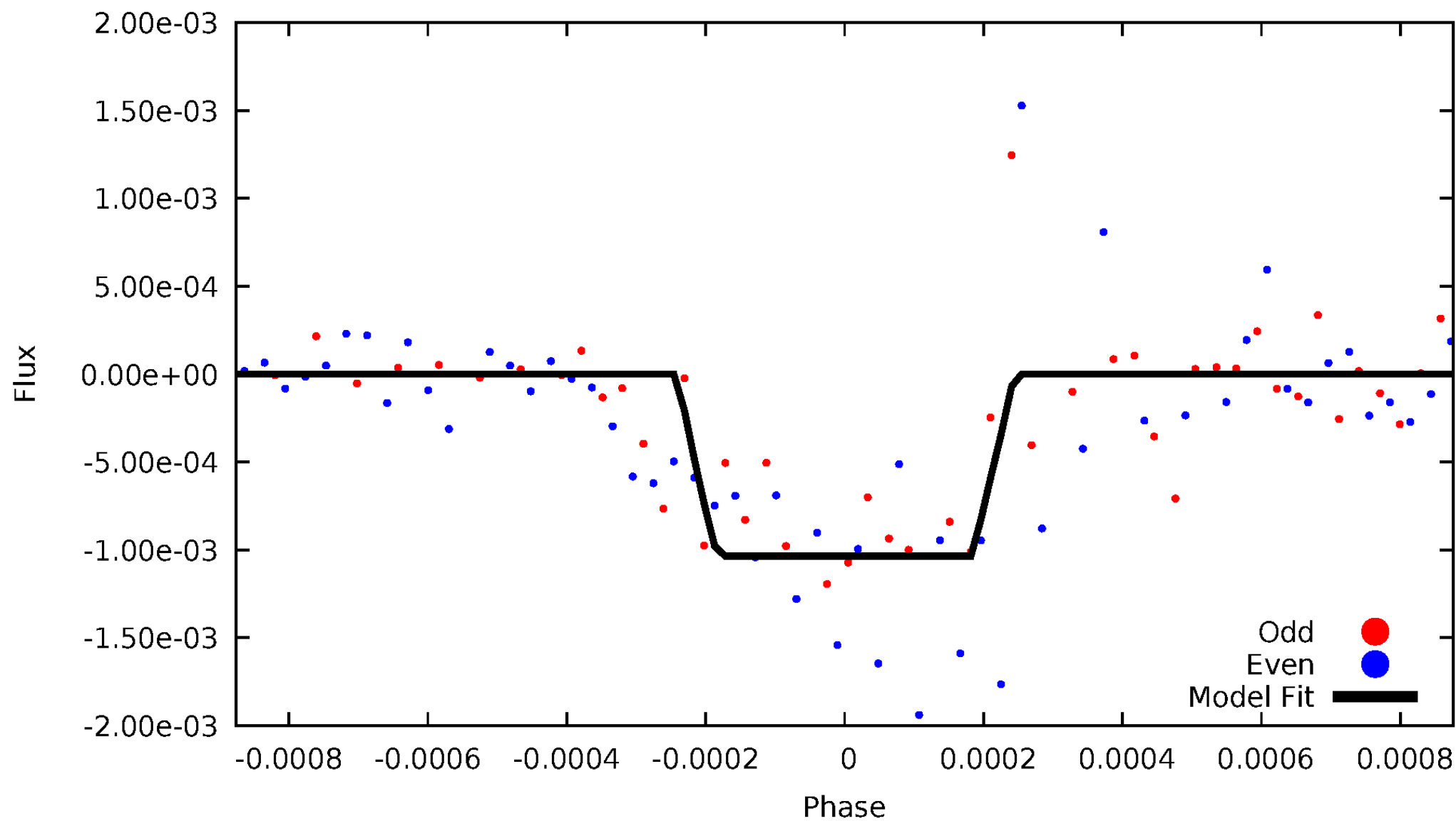
DV Odd/Even

TCE 009549091-06



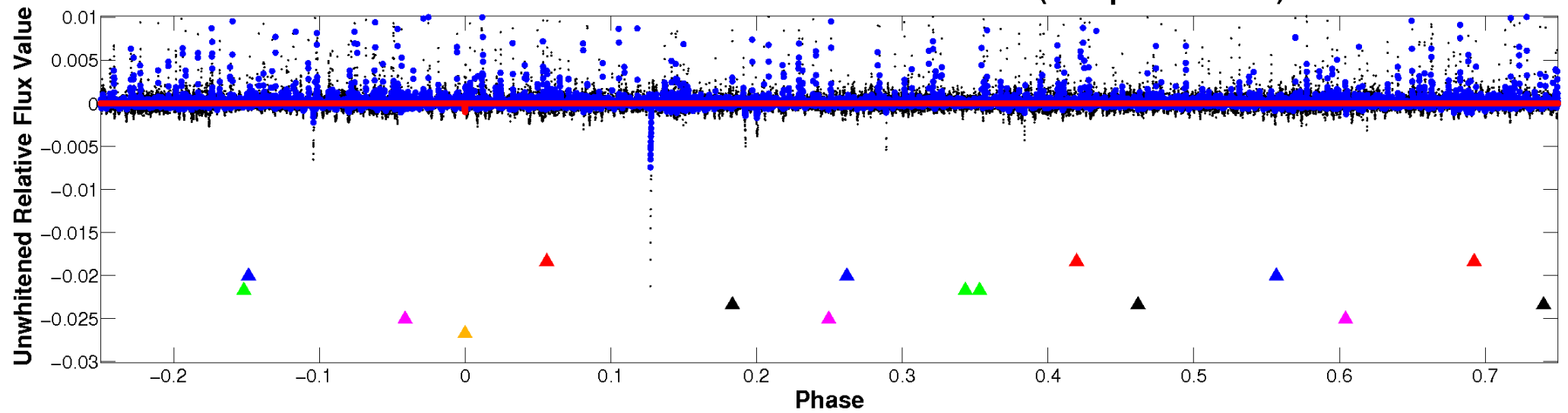
ALT Odd/Even

TCE 009549091-06

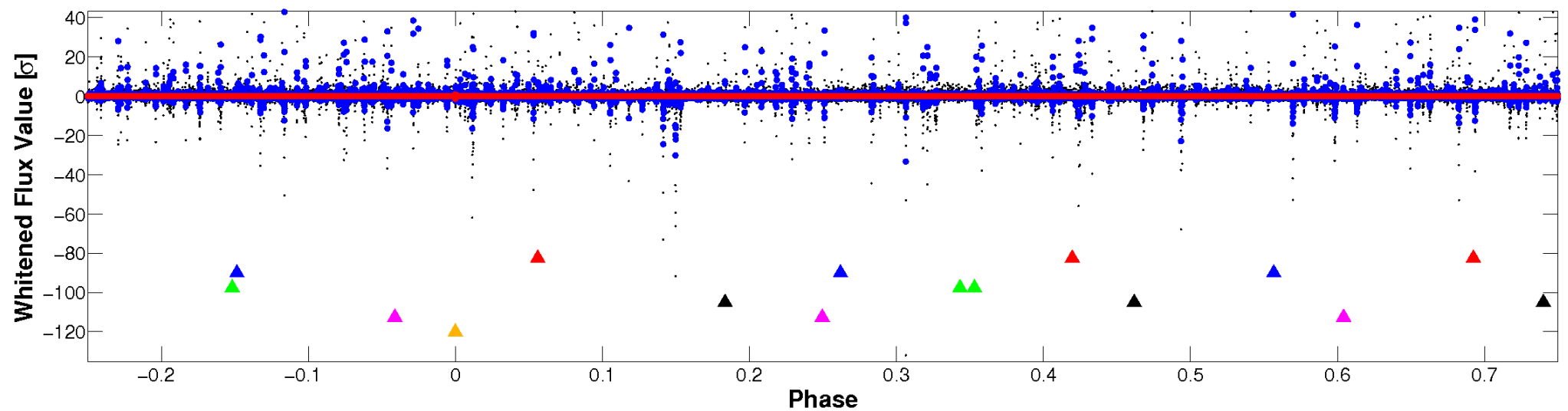


Non-Whitened Vs. Whitened Light Curve

Planet 6 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

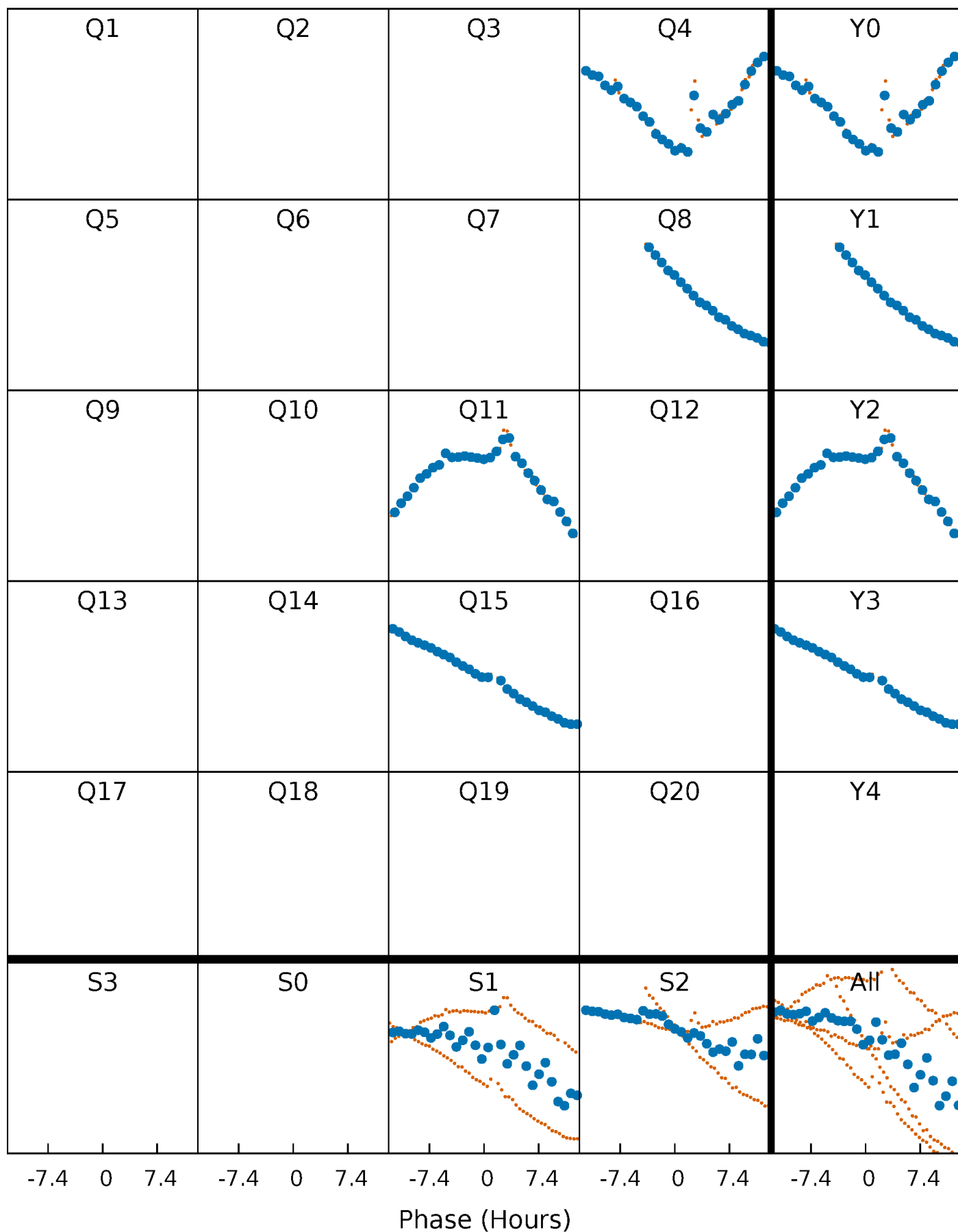


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



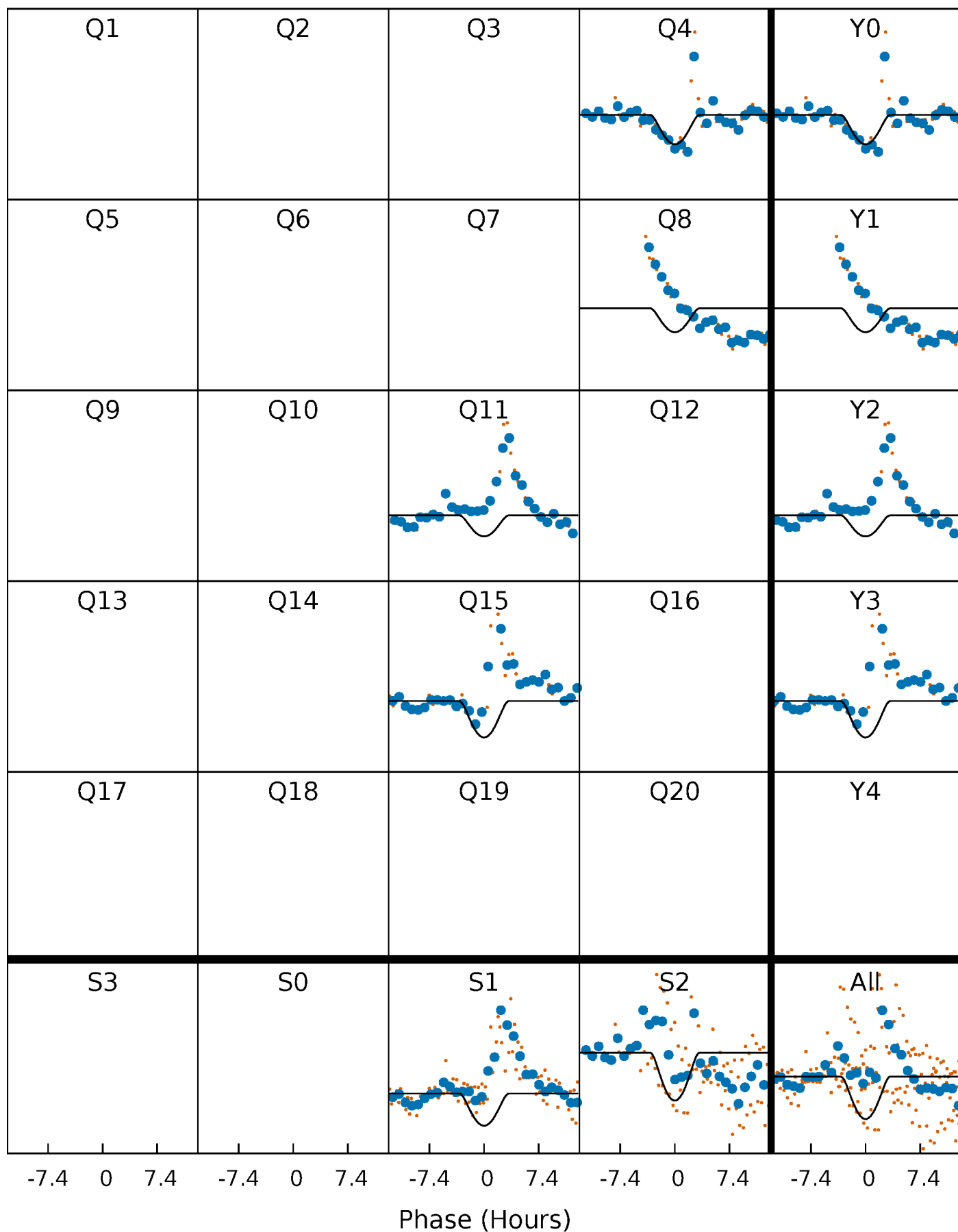
PDC Quarter-Phased Transit Curves

TCE 009549091-06 P=346.974738 Days $T_0=388.573649$ (BKJD)



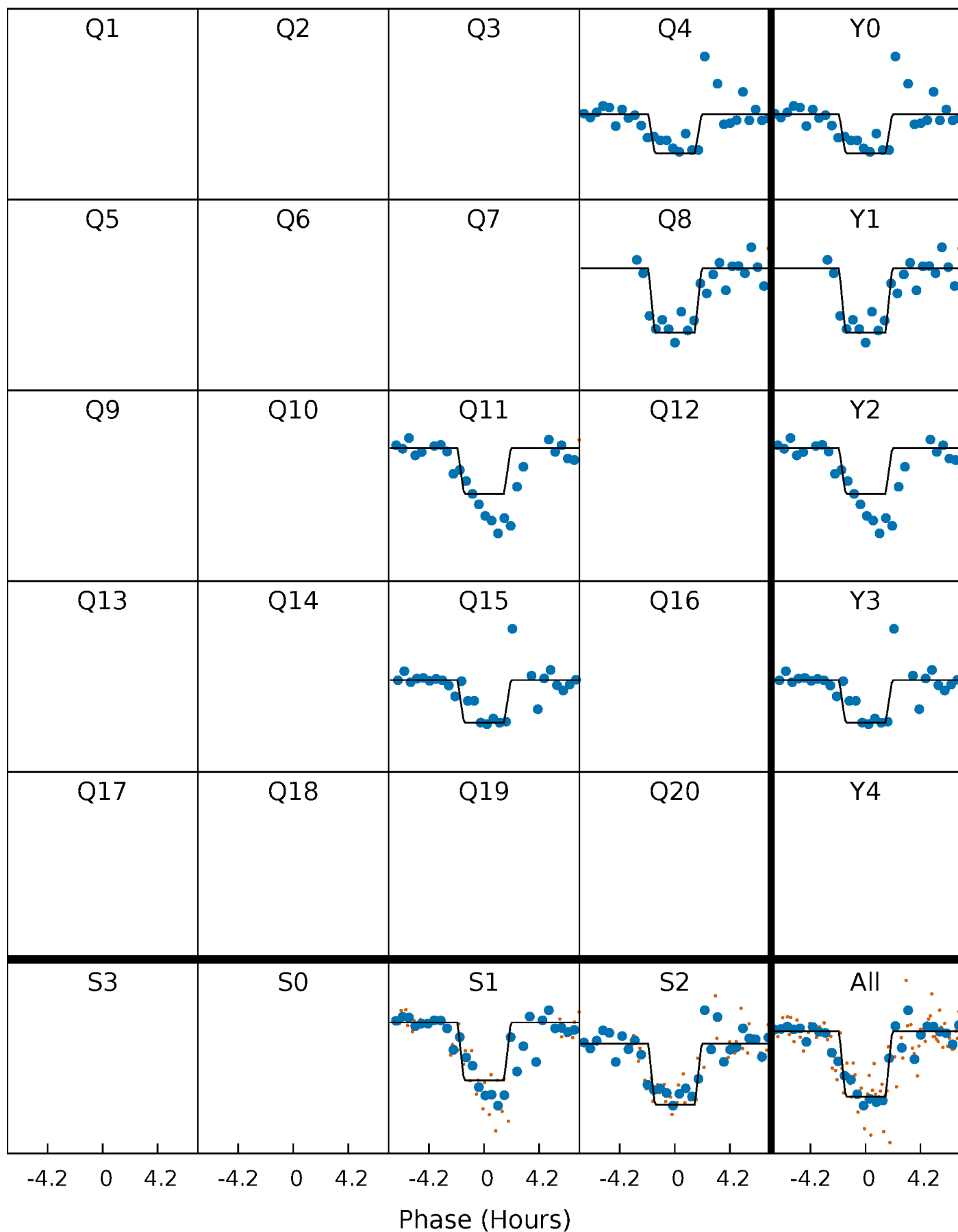
DV Quarter-Phased Transit Curves

TCE 009549091-06 $P=346.974738$ Days $T_0=388.573649$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

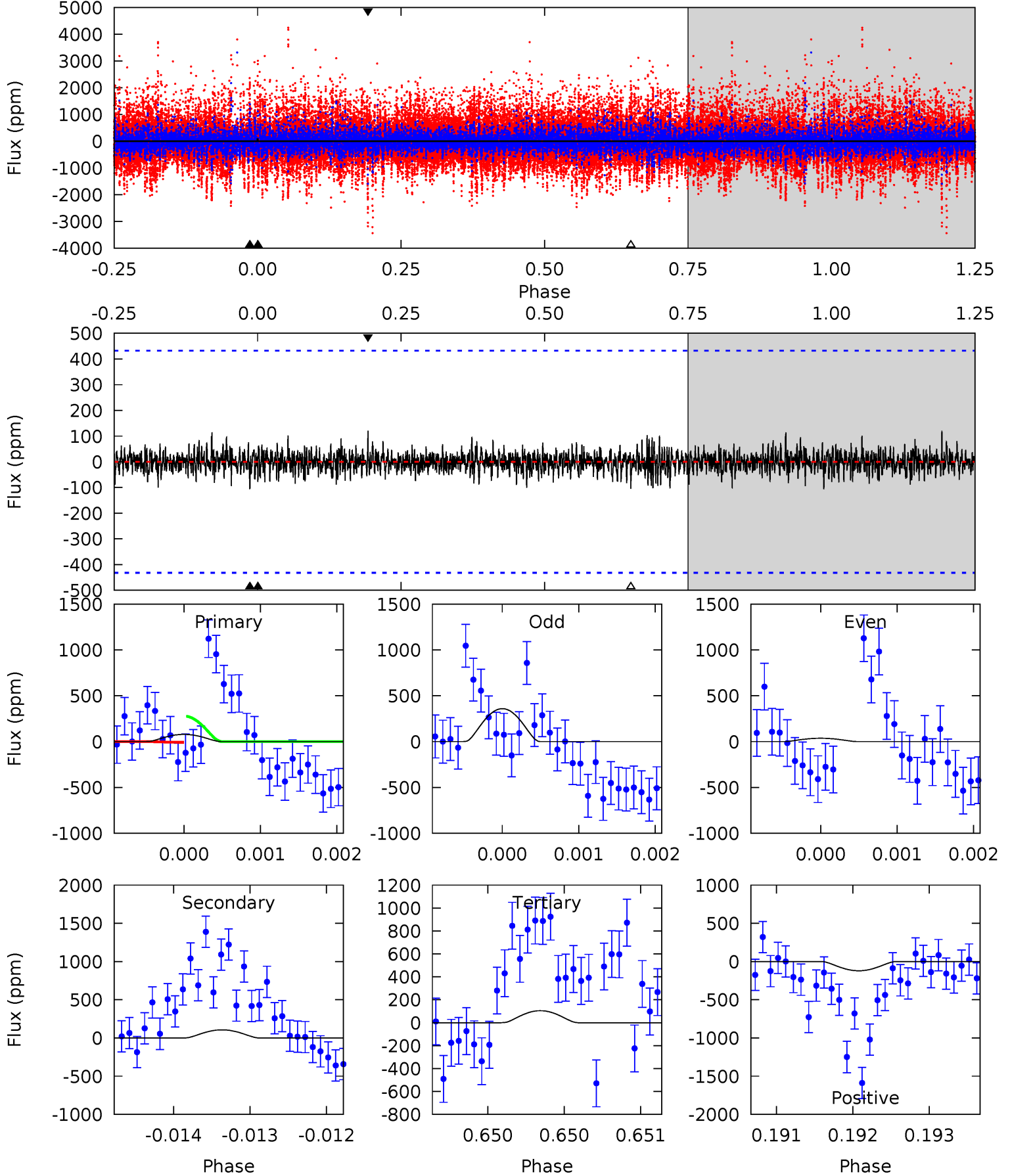
TCE 009549091-06 $P=346.958242$ Days $T_0=388.577810$ (BKJD)



DV Model-Shift Uniqueness Test

009549091-06, P = 346.974738 Days, E = 41.598911 Days

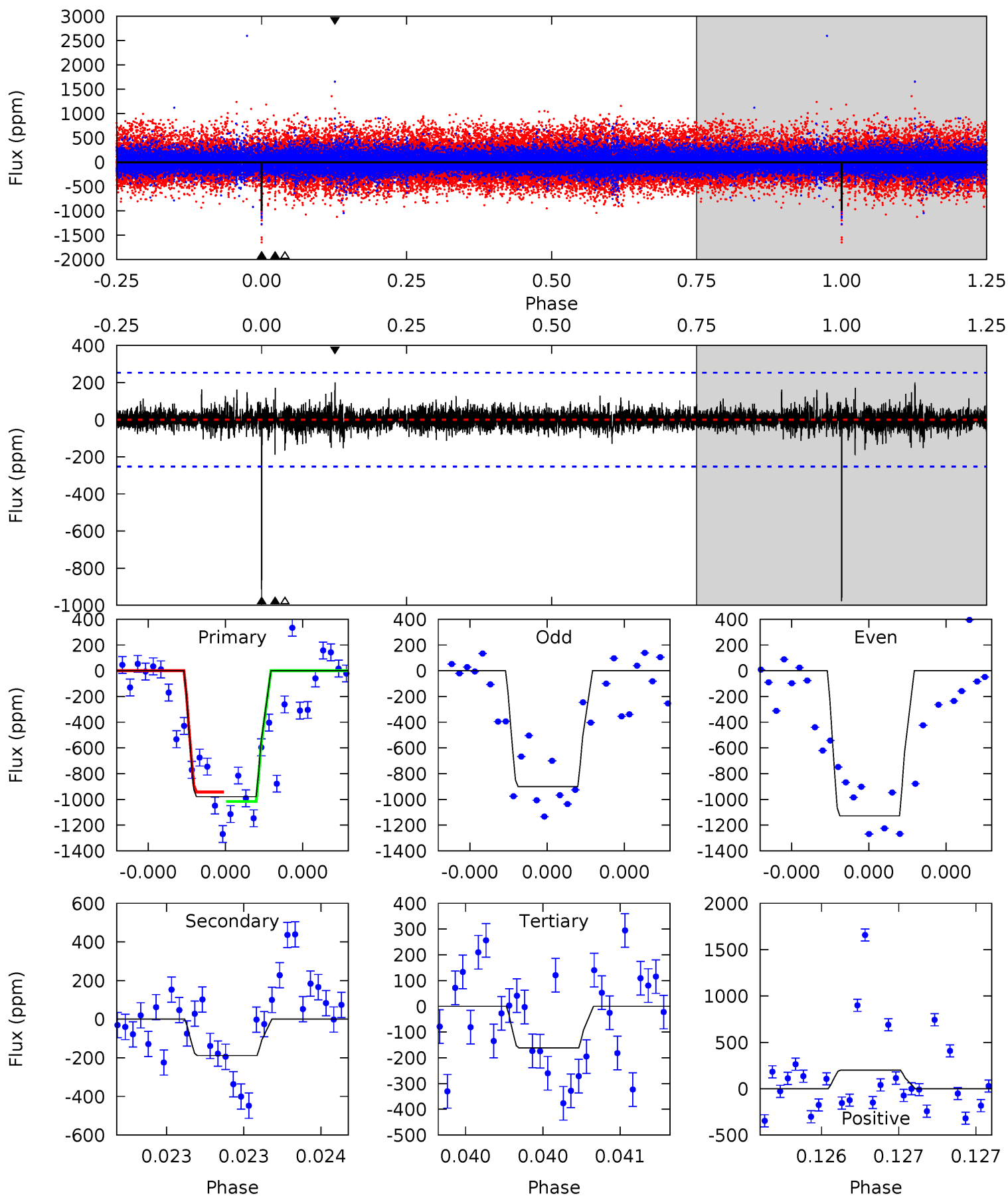
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.00	1.35	1.33	1.53	5.49	3.34	0.38	-0.33	-0.53	0.02	-0.18	1.77	0.40	0.53	1.70



Alt Model-Shift Uniqueness Test

009549091-06, P = 346.958242 Days, E = 41.619568 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.6	4.16	3.58	4.44	5.59	3.50	0.68	18.0	17.2	0.58	-0.28	2.44	1.15	0.17	0.82



Stellar Parameters For KIC 009549091

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5110^{+153}_{-138}	$3.818^{+0.805}_{-0.345}$	$-0.280^{+0.300}_{-0.250}$	$1.900^{+1.387}_{-1.134}$	$0.867^{+0.254}_{-0.157}$	$0.178^{+2.804}_{-0.116}$
	+3%/-3%	+21%/-9%	+107%/-89%	+73%/-60%	+29%/-18%	+1576%/-65%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 009549091-06 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-106 ± 79	$28.84^{+31.21}_{-20.32}$	439^{+85}_{-71}	2179^{+726}_{-383}	48^{+579}_{-42}
Alt.	-188 ± 45	$26.22^{+31.37}_{-19.31}$	444^{+72}_{-79}	2476^{+986}_{-368}	136^{+1644}_{-109}

T_{max} = Theoretical Maximum Planetary Temperature
 T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)
 A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{\text{obs}} \gg T_{\text{max}}$ AND $A_{\text{obs}} \gg 1.0$

DV Centroid Data

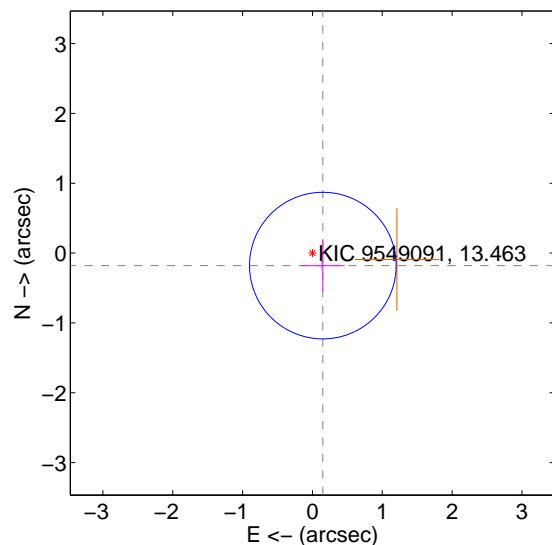
Supplemental centroid analysis for 009549091-06. Kepler magnitude: 13.46. Transit SNR 6.35

There are 1 quarters with good PRF difference image offsets

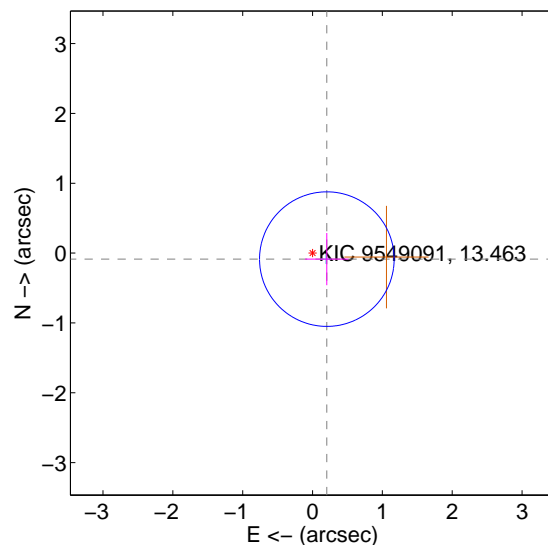
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.233 ± 0.350	0.67	-0.149 ± 0.311	-0.179 ± 0.374
PRF-fit source offset from KIC position	0.222 ± 0.321	0.69	-0.205 ± 0.311	-0.086 ± 0.374
photometric centroid source offset	0.45 ± 0.81	0.56	0.34 ± 0.81	0.30 ± 0.82

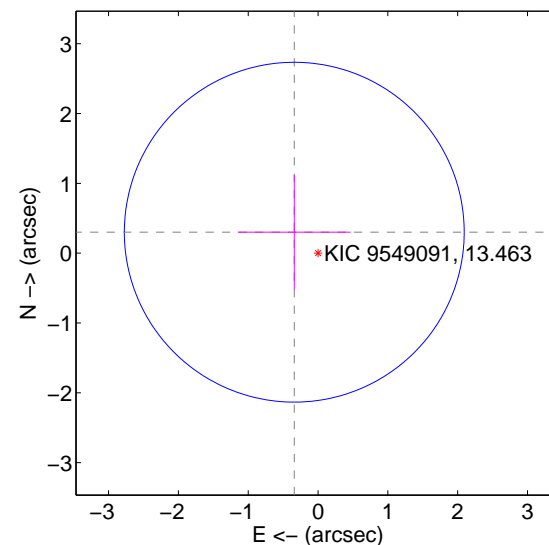
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

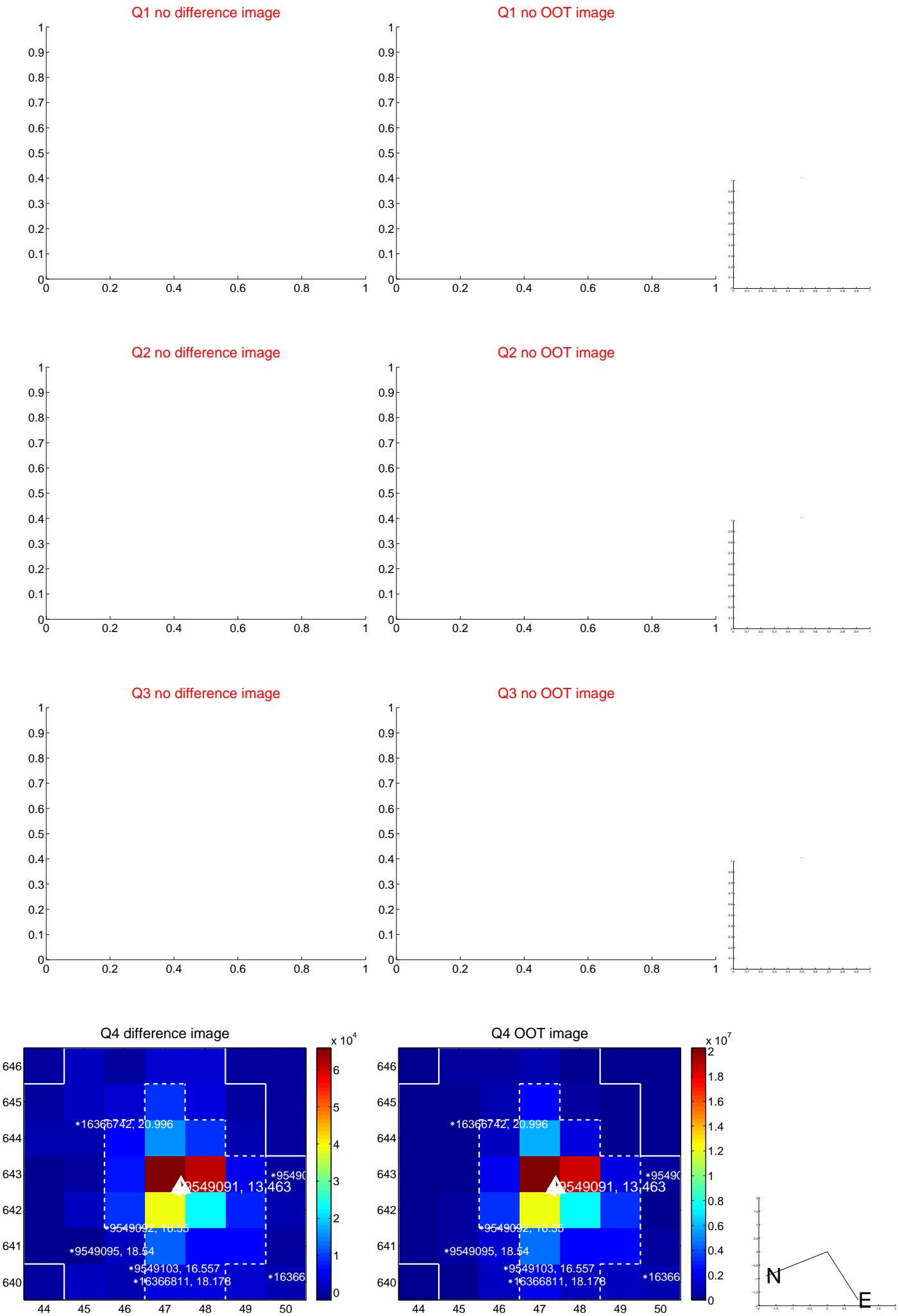


offset from photometric centroids



Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

Q13 no difference image



Q13 no OOT image



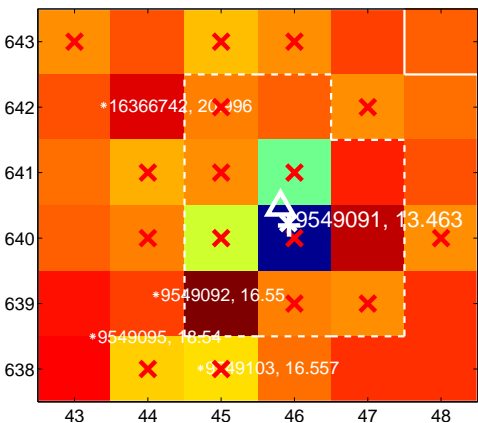
Q14 no difference image



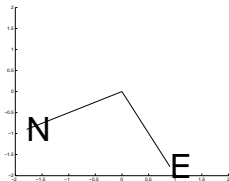
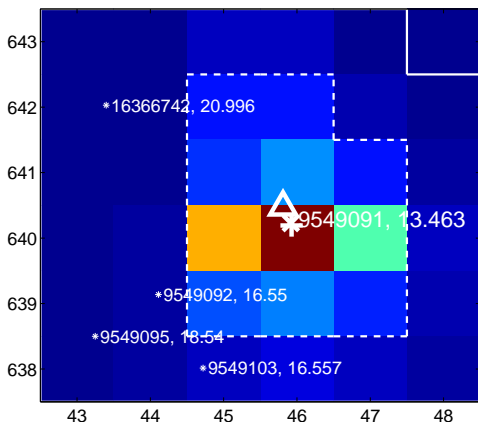
Q14 no OOT image



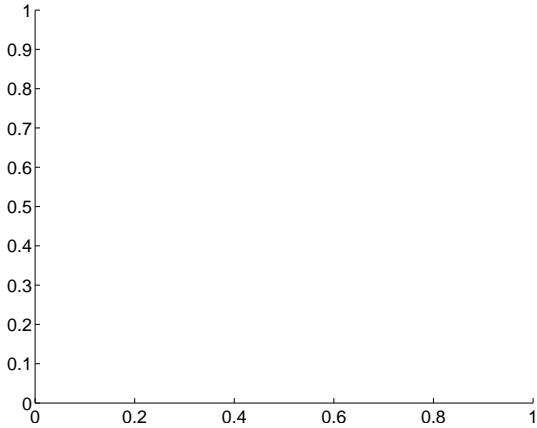
Q15 difference image. Poor Quality



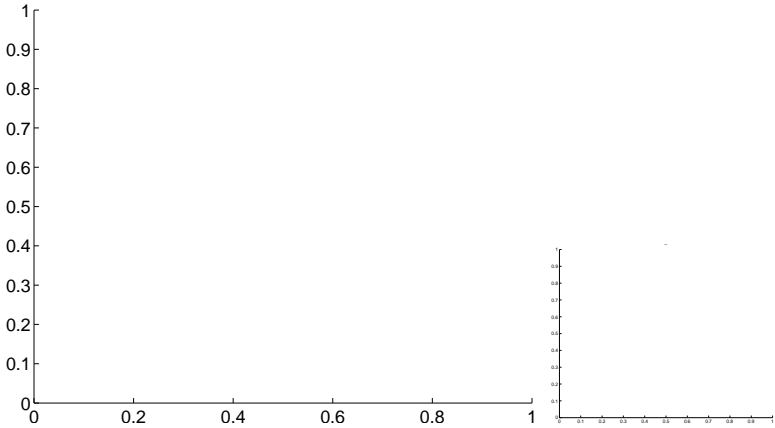
Q15 OOT image



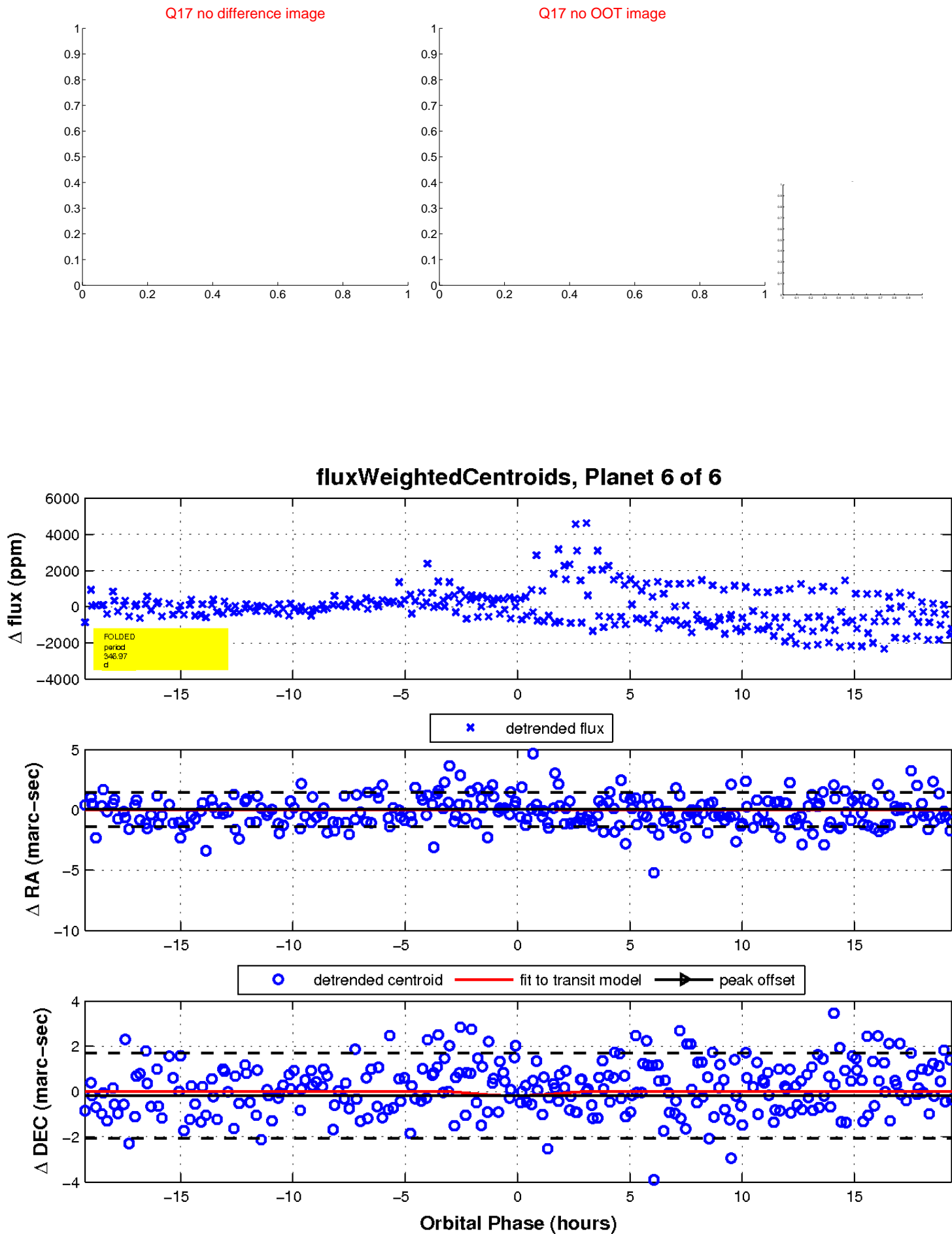
Q16 no difference image



Q16 no OOT image



white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination

